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VETERINARY MEDICINE

April, 1933

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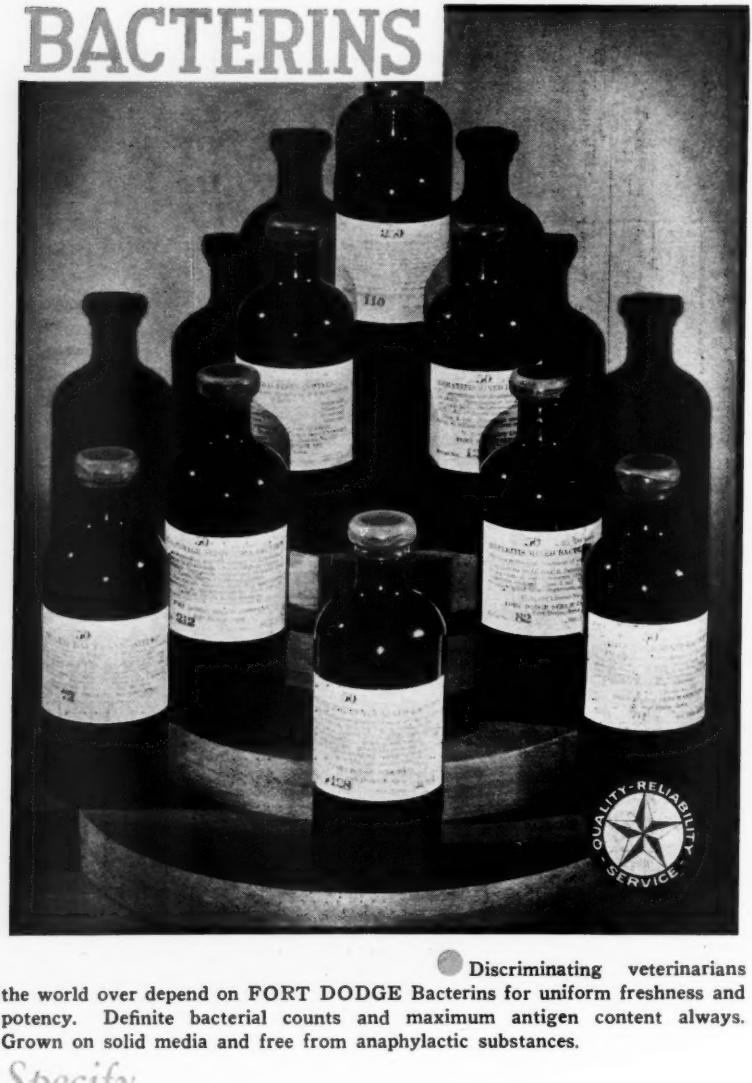
No. 4
VOL. XXVIII

75 E. Wacker Drive
Chicago, U. S. A.

BACTERINS



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FORT DODGE

MORE THAN HALF THE PRACTICING VETERINARIANS OF THE UNITED STATES USE FORT DODGE PRODUCTS - - - -

Veterinary Medicine

Registered in U. S. Patent Office

VOL. XXVIII APRIL, 1933 No. 4

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D. M. Campbell, Editor A. T. Kinsley, Associate Editor
H. J. Mostyn, 230 Fifth Ave., New York, Eastern Representative

A tetanus toxoid has been developed which is said to produce an immunity to tetanus of long duration, and therefore is desirable for use in districts where the soil is thoroughly seeded with tetanus organisms.

In research undertaken by Davidson of the University of Aberdeen (Scotland), it was found that an extract from the livers of cod, haddock and whiting is effective in treating pernicious anemia. Beef liver and extract of horse liver are now widely used for this purpose.

Lagrange discovered that the brain, liver, spleen, blood and filtered feces of naturally infected fowls that had died of fowl plague were avirulent. Strangely, brain tissue of these fowls injected into healthy fowl, immunized them, although a fowl recovering from the disease does not acquire immunity to it.

It has been shown that the *Fasciola hepatica* will survive in the livers of sheep from three to five years. An investigation by Montgomerie shows that this parasite persisted in the livers of experimentally infected rabbits for a period of more than three years, and that the egg production did not diminish during that time.

Ross concludes as a result of three experiments, that monthly treatments with carbon tetrachloride is an effective way of dealing with the large stomach worm of sheep—*H. contortus*—and may lead to its eradication.

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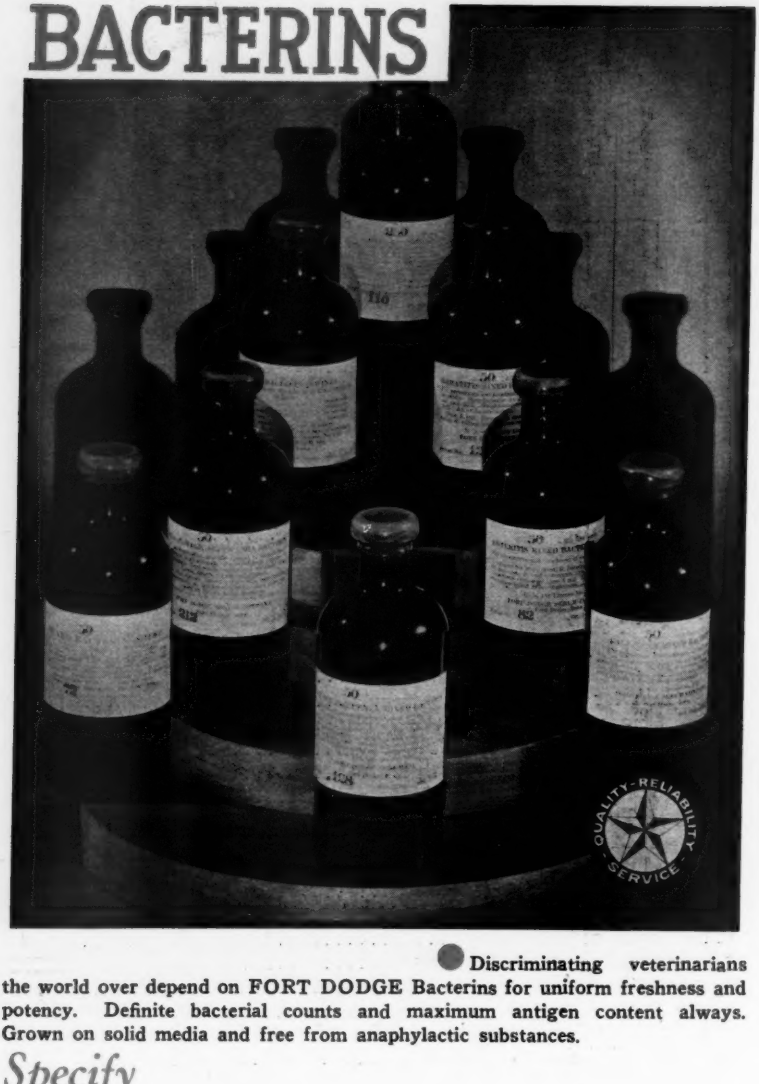
BACTERINS



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THE COUNTY AGENT PROBLEM

In the matter of the efforts of the veterinary profession and others to curb the harmful activities of county agents in particular and all agricultural extension services in general, not much that is conclusive can be reported at this time. The "do less" 72nd Congress adjourned without, as was predicted, doing much of anything other than talking about reducing routine government expenditures. The Agricultural Extension Service rode along with other despoilers and received for the fiscal year ending June 30, 1934, $5,660,822. The report of the "Shannon Committee" received scant attention. It will come before the next Congress, however, and doubtless will receive serious consideration. The Extension Service of the Department of Agriculture will have a difficult time explaining away or covering up the facts laid before that Committee by the A. V. M. A. Special Committee on Agricultural Extension There is as yet no occasion to be sanguine; the Extension Service has performed miracles—in its own behalf—before and may do so again. Still the fact that it will receive, next year, just over half of the sum it has been wasting yearly heretofore is encouraging.

There is little advantage at the present writing in reviewing the action on appropriations for state agricultural extension in the various state legislatures now in session, since changes are probable before adjournment. If veterinarians had acted militantly as organizations in the various states, far more would have been accomplished. If they would do so yet or even as individuals oppose this looting of the taxpayers much might yet be accomplished. So far as the writer knows, state veterinary associations have interested themselves aggressively in only Illinois, Nebraska and Texas.

Perhaps more definite success has been attained in Nebraska than elsewhere. In that state, House Bill No. 306 which will do away with county agents, has passed the lower house of the legislature and is now before the Senate.

In Illinois the prospects seem fair that the appropriation for agricultural extension will be reduced 50% from what it was last year. Friends of good government still have hopes of defeating all appropriation for this purpose; but the tax eaters are strong, well organized and amply financed.

In Iowa it appears there will be no reduction in the enormous appropriation heretofore made for agricultural extension. The credulity of the legislators in that state is shown by their faith in the "McArthur Bill" which if enacted, will limit the county extension program "to educational purposes and the use of funds for educational work only." It will specifically prohibit the county agent from handling funds, soliciting funds, engaging in commercial or political activity or discriminating between members of the Farm Bureau and other farmers in his educational work. The bill is wholly futile. The Smith-Lever Act and Regulations of the U. S. Department of Agriculture already contain the same provisions and no one in the Extension Service, from Washington to the counties, pays the slightest attention to them. In the view of the Extension Service, the purchase and distribution of feed, fertilizer, paints, etc., is educational when the county agent says it is. So is the vaccination of hogs for the prevention of cholera.

The greatest single asset of the Agricultural Extension Services, both National and state, in their efforts to perpetuate their rackets has been the exaggerated and often false official reports of their activities that they have systematically circulated for a dozen years. We have been accustomed to laugh at these reports as harmless ravings. It was no one's business to contradict them and now they stand as official records of achievements that tremendously impress legislators. No legislator, state or na-

tional, is willing to do anything that might make the lot of the farmer more difficult and rightly so. The Extension Services by claiming credit for the 4H Clubs, the better sires movement, dairy improvement associations, tested sires, etc., to none of which they are essential and by presenting official reports showing a perfectly fantastic list of individual services to farmers, have been able so far to get away with murder, figuratively speaking, in many legislatures.

REPORT ON COUNTY AGENT ACTIVITIES
32,950 COWS TB TESTED
57,730 HOGS TREATED FOR CHOLERA AND OTHER DISEASES
212,576 FOWL TREATED FOR "SIMPLE" DISEASES
24,559 OTHER ANIMALS TREATED FOR "SIMPLE" DISEASES
WONDER IF THAT MAN EVER HEARD OF GEORGE WASHINGTON?
SMITH-LEVER ACT
SCHMOK
JUST ANOTHER SCRAP OF PAPER

The A. V. M. A. Committee in its testimony before the "Shannon Committee" called attention to systematic exaggeration and falsification of official reports of county agent activities and the danger that lies in them. On this subject, the testimony reads:

"Frequently these reports by the agents are misleading, overdrawn and sometimes downright false. As a *typical* example, in the 1928-1929 annual report of the President of the Georgia State College of Agriculture, credit is claimed for the county agents doing the following veterinary practice: 32,950 cows tuberculin tested; 57,730 hogs treated for cholera and other diseases; 21,591 other animals treated for 'simple' diseases. In the next annual report credit was claimed for tuberculin testing 20,960 cows; for treating 52,040 hogs for cholera and other diseases; treating 24,559 other animals for simple diseases and treating 81,559 fowl for simple diseases. Among the 'simple' diseases listed, we find such serious plagues as hog cholera, hemorrhagic septicemia, contagious abortion, fowl cholera, etc! The astonishing part of this report is that Dr. A. G. G. Richardson, head of the Veterinary Division of the Georgia State College, who was a specialist employed to assist county agents, stated (in reply to an inquiry) that he does not have all of the facts concerning all of the work of county agents, but that he does know that *no cows were tuberculin tested by county agents,* and that similar conditions probably obtain in respect to a good deal of the other veterinary work claimed to have been performed by county agents." He thinks some county agents may have helped in "lining up" the cattle owners of the county in favor of the area tuberculin test. That on the basis of this they should claim credit for actually having performed all the tuberculin testing in the state seemed not at all surprising to the officials of the Georgia State College.

The Iowa solons should read the statement of the Hon. Joseph B. Shannon, M. C., at the time of his committee hearing in Chicago. Congressman Shannon said:

"The only way to reach a bureau is to crack it in the head by taking away its money. If bureaucracy is not destroyed than this government will be destroyed, eventually."

Encephalomyelitis of Horses in Colorado*

By I. E. NEWSOM, Fort Collins, Colorado
Veterinary Pathologist, Colorado Agricultural Experiment Station

ENCEPHALOMYELITIS of horses under a great variety of names, such as "cerebrospinal meningitis," "forage poisoning," "Kansas Horse Disease," "Borna Disease," and "botulism," has appeared in epizootic proportions throughout the United States during the last century. Meyer reports that it has been described by various authors in 1847, 1850, 1869, 1882, 1897, 1902 and 1912, and on several occasions since that time.

Geographically, it has affected horses in the eastern portion of the United States in North Carolina, Louisiana, Texas, the Mississippi Valley, the Rocky Mountain states, and the Pacific Coast region. It appeared in California in the San Joaquin Valley in 1930, became more wide spread in 1931 and in 1932 it spread over the western half of the United States. The epizootic here described was a portion of this larger outbreak.

The disease has appeared in Colorado on three occasions. First, in connection with the wide spread outbreak of so-called Kansas Horse Disease in 1912 which affected horses in Kansas, Oklahoma, Missouri, Iowa, Nebraska, North and South Dakota and Colorado. At that time not over 150 cases were seen in this state and they were limited to a single county in the extreme southeastern portion. The disease appeared again in 1919 affecting probably 1800 horses. As far as is known the malady did not appear in the surrounding states at that time. In 1932 it became much more wide spread, invading new areas. The information presented on the 1932 outbreak was obtained by sending questionnaires to all veterinarians in the state located in districts where the disease existed. The photographs shown herewith were taken by Doctor J. E. Menter of Julesburg, Colorado and kindly loaned for this purpose.

*Presented at the Annual Meeting Colorado Veterinary Medical Association January 19, 1933.

Geographical Distribution

While the information as to the actual number of cases in each county is somewhat faulty, if we attribute the cases reported by each veterinarian to the county in which he lives they will be as follows:

Sedgwick	168
Adams	111
Logan	98
Weld	74
Alamosa	69
Morgan	62
Otero	55
Rio Grande	52
Yuma	44
Phillips	43
Saguache	31
Bent	29
Prowers	10
Larimer	3

The disease seems to have centered in three areas: In the Arkansas Valley with 94 cases, northeastern Colorado with 603, and the San Luis Valley with 152. In the 1912 epidemic approximately 150 case were seen in the Arkansas Valley and these were practically confined to Powers County. In the 1919 epizootic, the disease extended up the Valley almost as far as Pueblo and was quite wide-spread in northeastern Colorado. In 1932 the disease, while fairly extensive in the Arkansas Valley, was much more so in the northeastern part of the state and appeared for the first time in the San Luis Valley. This seems to indicate progressive spread in succeeding epizootics. It may be also pointed out that, within reasonable limits, disease incidence follows river valleys. While it is true that there are few veterinarians in the eastern part of the state between the Arkansas and the Platte Valleys it is interesting in this last epizootic that Doctors Schafer of Hugo and Duncan of Kiowa, who are

situated midway between these rivers, report that they have neither seen nor heard of cases in their localities.

Number of Cases

The number reported as seen by veterinarians was 410, and those occurring in the vicinity but not seen by practitioners is 484, making a total of 849. Since it is well known that many owners either did not have access to a veterinarian or for other reasons did not call one, it seems probable that there were two or three hundred more cases than were reported.

Sex—Age—Season

Of those where sex was reported, 181 were in females and 226 males, with three mules.

The age ran all the way from two months to 20 years. Seven of the cases were under one year of age. The maximum numbers appeared from five to fifteen years of age. There were 48 cases given as 15 and 50 given as eight.

Five cases were reported as having been seen in June, six in July, 88 in August, 222 in September and 11 in October. In 75 cases no date was given. The earliest reported case was seen on June 8 and the last on October 20.

Duration

Six cases were reported as having been sick one day; 36, two days; 61, three days; 52, four days; 43, five days; 34, six days; 30, seven days; 10, eight days; 2, nine days; 15, ten days; 2, eleven days; 3, twelve days; 9, fourteen days; 5, fifteen days; 1, sixteen days; and 2, twenty days.

Case Mortality

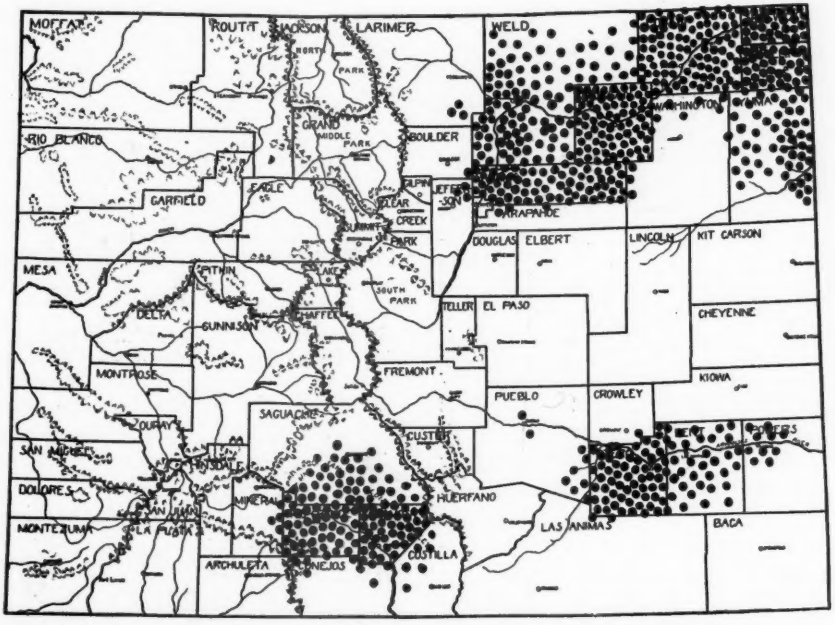
Of the cases treated by veterinarians, 235 lived and 130 died. Mortality 36 percent.

Susceptibility

In 250 instances only one animal was sick on a place. In 40 there were two; in 15, three; in 10, four and in one, six cases on the place.

Treatment

The reports on treatment were so varied that no summary can be made. It was gratifying to note that drenching had been entirely abandoned and that when



Encephalomyelitis in Colorado in 1932—Geographical Distribution.

treatment was administered it was either given hypodermically or through the stomach tube.

Discussion

Due to the work of the California investigators, Meyer, Haring, *et al*, we may now say that encephalomyelitis is due to a filterable virus which is capable of being transmitted to experimental animals by means of intracerebral, intraocular, intraperitoneal, intravenous, subcutaneous and intranasal injection. That the virus is not the same as that of the Borna disease of Germany has been amply proved by these workers in a great variety of ways. Borna virus is not transmitted by subcutaneous inoculation. The incubation period is much longer than that for encephalomyelitis, the size of the virus is different as shown by passage through filters, and the argument is further clinched by showing that experimental animals can be immunized against one and remain susceptible to the other. Doctor Meyer believes that the French disease described by Moussu and Marchand is also different from the American disease but this decision is based upon the clinical description rather than on comparison of the viruses.

Three-year-old mare died 10 hours after photo was taken.

It has been fully proved that the virus is present in the blood of both horses and other experimental animals very early in the disease but that it leaves the blood stream at the subsidence of fever. Much evidence has been adduced to show that hyper-immune serum when given at the time of inoculation of the virus will prevent the development of the disease; but if delayed until the virus appears in the blood, it is of no value. This finding would seem to limit the use of serum as a curative agent. Small subcutaneous injections of the virus did immunize animals against the disease in most cases but are not without the possibility of producing carriers.

This case stood in this position most of the time. Sometimes was down on the sternum.

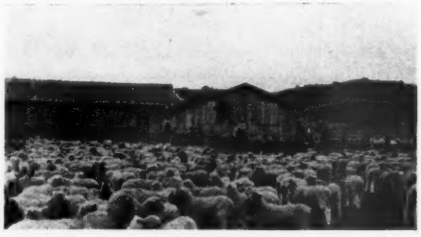
The fact that the disease appears in the late summer and rapidly subsides after frost would point to the possibility of an insect carrier but there seems to be nothing in the literature on this question.

Doctor Meyer believes that only one horse in ten is susceptible. This view

seems to be borne out by our Colorado experience since in most instances only one horse on a place was affected. In many instances, however, the disease jumped such radical distances from one farm to another as to indicate that there may have been a number of mild intervening cases which were overlooked. This conception has been mentioned as a possibility in the explanation of poliomyelitis.

Showing Pendulous lips characteristic of the disease.

On the basis of the California experience, the disease having developed in three consecutive years, Doctor Meyer presents the possibility of a nation-wide spread in 1933. The Colorado experience is in opposition to this view since our three epizootics have been widely separated in point of time.



TYRAMINE IN PARTURIENT PARESIS

I have collected more than a dozen samples of milk and colostrum from cows down with milk fever. Also samples from fresh milk cows not affected with milk fever. I have always tried to obtain the first milk taken from the cow after she went down. I mailed these samples to the University of Chicago laboratories. There they found the samples, from all cows sick with milk fever, contained tyramine and the others did not.

I have not been able to find much literature on tyramine. It is said to be a very toxic protein. This may explain why cattle down with protein poison from feed respond to calcium treatment. It is also said that milk from the human suffering from eclampsia shows the presence of tyramine.

Romeo, Mich. B. DeWitt Ewalt.

Comment: Experimentally tyramine appears to give a definite rise in blood pressure. It has been shown by Hanke and Koessler in 1924 that bacteria normally present in the human intestine are able to form histamine and tyramine from the corresponding amino acids. Mellanby (1915) using chloroform and A. C. E. anesthesia obtained a marked fall of blood pressure on introducing histamine into the small intestine of cats.

Doses of .005gm. of tyramine into the large intestine of dogs always produced a definite *rise* in blood pressure. The arterial blood pressure of the dog is readily elevated through the administration of tyramine by way of the cecum.—E. C. Mc.

Following are some references on the subject:

Coyle, Charles L.; and Boyd, T. E. 1931. The Absorption of Tyramine from the Intestine. *Am. Jour. Physiology,* 99:317.

Hanke, M. T.; and Koessler, K. K. 1924. *Jour. Biol. Chem.,* LIX:835.

Mellanby, E. 1915. *Quart. Jour. Med.,* IX:165.

Iwas, T. 1931. Tyramine, Experimental Studies of Anemia-Producing Action. Tr. Jap. Path. Soc., 21:537.

Burn, J. H.; and Tainter, M. L. 1931. Tyramine. *Jour. Physiology,* 71:169.

Dairy Inspection in Minnesota*

MILK is one of the most important and indispensable foods in daily dietary of the people in this country. The tremendous increase in production and consumption of milk within the last decades has brought with it problems relating to its safety and wholesomeness. There is no branch of human activity in which science has wrought more beneficial changes than in the production of market milk. Milk hygiene constitutes one of the conspicuous developments in modern health work. Nevertheless, the production of an abundant supply of safe wholesome milk has been, and still is, attended with great difficulties.

Table 1, a summarized record of milk borne epidemics occurring in the United States during the seven years, 1924 to 1930, indicates that the responsibility of producing a safe market milk has not yet been fully met as there is no apparent decrease in the amount of disease caused by milk contaminated with organisms capable of producing disease in man. In Minnesota during the 21-year period, 1911 to 1931, there were 193 outbreaks and 1,137 cases of diseases traced to milk. This is an average of an outbreak every six weeks. These figures do not include tuberculosis transmitted through milk; neither do those in Table 1.

TABLE I.

Milk-Borne Epidemics in the U.S. from 1924-1930 As Reported by State Health Officers

Year	Epidemics	Cases	Deaths
1924	41	1,374	90
1925	44	1,916	42
1926	66	2,866	70
1927	27	770	34
1928	36	2,021	87
1929	44	1,959	48
1930	48	1,968	56
Yearly Average	44	1,839	61

From studies of milk-borne epidemics the following have been found to be the principal sources of disease organisms spread through milk: In order of importance, 1. Chronic carriers of disease; 2. Sick persons working at the dairy; 3. Contaminated and unsterilized bottles; 4. Polluted water supply at the dairy; and 5. Diseased cows.

"Carriers" and "cases on dairies" combined cause about three-fourths of the epidemics.

Because milk is highly susceptible to contamination, municipalities have passed ordinances requiring definite standards in methods and equipment for handling milk. There are various types of these ordinances designed to give the consuming public a safe milk. Local conditions determine what type of ordinance is best suited for each municipality; but there is a great deal of effort being made to standardize milk ordinances.

The four major items necessary in any ordinance for the production of a clean, safe milk of good quality are:

1. Healthy cows.
2. Healthy milk handlers.
3. Clean and sterilized milk utensils.
4. Prompt and proper cooling.

One of the greatest problems confronting dairy inspectors is to convince the dairy farmer that he is selling a hazardous product that calls for extra equipment and care not required in the production of most other farm commodities.

To produce a high quality milk some of the many requirements are:

1. Annual tuberculin test of cattle.
2. Health certificates for all milk handlers to show freedom from infectious or cummunicable diseases.
3. Prompt cooling of the milk to a temperature of 50 degrees or below and maintaining it at that temperature until delivered to the consumer.
4. Clean and sterilized milk utensils.
5. A clean milk house and a barn properly cleaned, lighted and ventilated. Floors constructed with an impervious material. The walls and ceiling painted, or of some approved finish.

*Report of the Committee on Dairy Inspection to the Annual Meeting of the Minnesota Veterinary Medical Society—Jan. 12, 1933, by G. S. Failing, Chairman.

6. No straining of milk in the barn.
7. Udders and teats to be clean and dry at the time of milking.

These additional items of equipment and care make a price to dairymen producing milk for fluid consumption, of one dollar per hundred-weight not unreasonable. The consuming public is willing to pay extra for milk that is produced under these modern sanitary conditions. This has been amply demonstrated in Winona for the past ten years. This will assure the dairyman a fair return on his investment and allow him a reasonable price for his labor.

During the past few years difficulty has been experienced by milk control officials in increasing or even maintaining sanitary standards due, largely, to the low price of milk. Dairymen selling their supply to creameries and cheese factories where no inspection is required have been prompted, for an increased remuneration, to attempt to dispose of their products in cities, contrary to ordinances. In a number of cities it has been necessary to amend the ordinances to protect the public's health from this milk of unknown or questionable quality. As a result of this unfair competition, the retail price of milk in many instances has been reduced to a figure below the cost of production.

Many municipalities in the United States have had milk wars of varying intensities to contend with. Bootlegging of milk is common where ordinances are not enforced or do not have the proper teeth to prevent this practice. Competitive price wars have necessitated the employment of arbitrators to settle controversies. Dairymen, as a rule, are not represented in such settlements, and fail to be awarded a price sufficient for a fair return on their investments and a reasonable wage for their labor. With this situation confronting him, the dairy inspector's work has been increased greatly and made far more difficult.

Thybromal, as a colormetric test for streptococcic mastitis, continues to be a very practical and economical agent. Its use in connection with bacteria counts is a valuable aid to dairy inspectors in discovering mastitis a frequent cause of high counts.

Various new chlorine preparations were introduced to dairymen the last few years. As a chemical sterilizing agent chlorine is effective and economical for use on dairy utensils. Solutions of 50 to 100 parts per million are effective. All solutions should be tested at regular intervals to determine the amount of available chlorine present.

Difficulty is experienced by some owners of milking machines in producing milk of a low bacterial count. However, milking machines can be kept in a sanitary condition. In this as in other matters of sanitation the milk inspectors or the dairyman's own veterinarian must instruct him in the proper procedure. Recently, tests have been made with a high test lye solution which have given good results in dissolving the fat that accumulates on the inside of the teat cups and tubes. A stock solution can be prepared by dissolving one can of high test lye in a gallon of water. An earthen or iron container is used.

The procedure is as follows: After milking, cold water is drawn through the machine to remove all milk. Then a lye solution made by using six ounces of the stock solution to one gallon of water is drawn through the machine. The units are then placed on a rack and filled with a solution of chlorine or immersed in a soak solution until ready for use.

During the past years a higher percentage of epidemics has occurred in rural communities and small cities than in larger centers of the population because they are served almost entirely with raw milk, that is not produced under effective or, in the majority of cases, any form of continuing milk control. Larger cities have long since recognized the protection afforded by pasteurization and insofar as milk borne epidemics are concerned, are reasonably protected.

Pasteurization is defined by the Minnesota State Board of Health as a process

whereby every particle of milk is heated to a temperature of at least 142° F., in approved equipment and maintained at that temperature for 30 minutes. It is then promptly cooled to a temperature of 50° F. or lower. This process does not change either the physical or chemical composition of the milk. This process will destroy the organisms of epidemic disease. Regardless of how efficient a system of dairy inspection may be, it will not always overcome dangers of infection from communicable diseases gaining entrance to milk in the process of handling before it reaches the consumer. To pasteurize properly it is necessary to have approved types of equipment to insure that every particle of milk will be heated to 142° F. Routine inspection of a pasteurization plant is one of the duties of a dairy inspector. It is now possible for rural communities and small cities to enjoy the protection offered by pasteurization as small and efficient equipment is available.

In the light of present knowledge regarding proper pasteurization a health officer who does not take cognizance of the improved health conditions it makes possible is not fully discharging his duty. He cannot say to the people whose health he is to protect that the milk they buy is a safe food if it is not given that added factor of safety, proper pasteurization.

In Winona, Minnesota, where 100% of the fluid milk supply has been pasteurized for the past ten years, the incidence of communicable diseases has been reduced to a negligible quantity. No diphtheria has been reported, except nonresident cases. There has been no cases of smallpox in the same period of time. The infant mortality rate has remained the lowest in any city in Minnesota. Glandular tuberculosis, bone tuberculosis and gastroenteric infections from milk borne infection have been completely eliminated.

In 1930 and 1931 the Minnesota Department of Health made surveys of the public health status of the milk supplies in the larger municipalities in Minnesota. The purpose was to find out to what extent the milk was produced under reasonably santiary conditions and to what extent it was pasteurized. The surveys included in 1930, all municipalities having a population over 5,000 and in 1931, all municipalities having a population of 2,000 to 5,000, except two. The survey method or "measuring stick" used was the one developed and used by the United States Public Health Service. It consisted essentially for each municipality of inspecting each dairy farm and pasteurizing plant concerned in the milk supply and determining to what extent certain standards for milk production and pasteurization were complied with. A combination of these data with the proportion of milk pasteurized determined the general or public health rating of the supply.

Table II which contains the results of these surveys indicates that the municipal milk supplies in this state are far from satisfactory, although the supplies of the larger cities are better in practically every respect than those of the smaller cities. Many of the communities, however, have made good progress recently, one or two showing unusual improvement. The Minnesota Department of

Milk Hygiene calls for clipping of dairy cows. The illustration shows how it is done in The Netherlands.

TABLE II.

Results of Milk Sanitation Surveys of Minnesota Municipalities over 2,000 Population. Made by Minnesota Dept. of Health, 1930 and 1931. The first-column is for cities of 2,000 to 5,000 population. The second column is for cities of more than 5,000 population.

	1931	1930
Rating of milk sold as raw milk	41%	64%
Rating of milk for pasteurizing	27%	30%
Rating of pasteurizing plants	75%	64%
Proportion of milk pasteurized	42%	81%
General or public health rating	33%	44%

Health made follow-up surveys in 1932 in eight of the cities between 10,000 and 25,000 population to determine what improvement if any, had been made. Table III shows the results of the 1932 survey as compared with the results in 1930 on the same eight cities. One city of about 10,000 population improved its public health rating from 38% to 70% in a period of only one year.

TABLE III.

Improvement of Milk Supplies in Eight Minnesota Cities Having Populations Between 10,000 and 25,000. From Surveys Made by the Minnesota Department of Health

	Ratings in 1930	Ratings in 1932
Rating of milk sold as raw milk	62%	75%
Rating of milk for pasteurizing	50%	63%
Rating of pasteurizing plants	76%	86%
Proportion of milk pasteurized	79%	80%
General or public health rating	56%	67%

Notwithstanding the work done by Federal, state and municipal health officials, the recurrence of milk borne disease epidemics with their annual totals of sickness, deaths and economic loss, not only indicates that many problems concerning the safety and wholesomeness of market milk have not been solved, but should be considered as impressive evidence that dairymen, milk distributors and milk control officials have a tremendous responsibility in assuring to the consuming public a clean and safe milk.

One of the valuable services that we veterinarians can render our communities is to support milk control work. By virtue of our training, I can conceive of no group of men better fitted to assist in this modern health program.

WATER AND CHEMICAL BALANCE IN SURGERY

T. G. Orr (*American Journal of Surgery*, November, 1932) emphasizes the importance of studying the water and chemical balance of every surgical patient. In surgical conditions that are known to cause marked water loss and salt deficiency, such as high intestinal obstruction and severe burns, careful estimate and correction of the water loss and chemical imbalance is imperative. The quantity of water loss is estimated on the basis of thirst, daily intake and output of fluid, and by determination of blood concentration by hemoglobin or hematocrit readings. Quantitative measurements of blood chlorides and the acid base balance are made in the laboratory. In all surgical cases an accurate "liquid chart" showing the daily intake and output should be kept, and with very ill patients, the blood chemistry readings should be determined daily. To maintain water balance in the average surgical case, the author advises a minimum daily intake of 3 liters of fluid for the first few days. In cases of low blood chlorides, salt therapy is started by giving 500cc of a 5% sodium chloride solution intravenously; this is supplemented by physiologic salt solution under the skin and by rectum and further intravenous injections in sufficient quantities to supply the water needed. The alkalosis that develops in pyloric and high intestinal obstruction is relieved by the administration of sodium chloride. If there is acidosis glucose is given intravenously either alone in 10% solution or added to the sodium chloride solution; if there is hypochloremia, glucose should not be used as a substitute for sodium chloride, but in association with it. Any intravenous injection should be given slowly; the author has found that one to one and a half hours is necessary for 500cc of sodium chloride or glucose solution. If continuous intravenous drip is used, the rate should be 30 to 60 drops per minute.—*Medical Times.*

Filariasis or Heartworms in Dogs*

FILARIASIS in dogs is due to an infestation of *Dirofilaria immitis*. The adult worms live in the cavity of the heart and in the large blood vessels. Rarely they are found in other tissues. The larvae occur in countless numbers in the peripheral circulation.

This parasitism has long occurred enzootically in the southern tier of states and as far north as the Carolinas. It is seen also in dogs in the northern states that have been taken south for the hunting season or for other reasons.

The adult female *Dirofilaria immitis* is ovoviparous. The larvae are unable to mature without passing through an intermediate host. Eight varieties of mosquitos are known to be intermediate hosts of this parasite, and it is thought that the dog flea may also serve in this capacity. The larvae are taken up by the intermediate host with blood from the peripheral circulation and after a time reinoculated into the same or other dogs through bites of these insects.

During recent years, there has been a marked increase in the prevalence of this parasitism throughout the southern states. It amounted in 1932 to a panzootic in Georgia, Florida, Alabama, Mississippi and Louisiana. It is believed the reason for this great increase in prevalence is to be found in the two exceedingly mild winters preceding the summer of 1932, which permitted mosquitos to breed throughout the two years in these localities, and thus made the reinoculation of dogs in that section practically a continuous process for 24 months.

Many dogs succumb to the infestation, but a far greater number are rendered useless for hunting or other purposes requiring any considerable physical exertion. During the past two years heartworm infestation in dogs has been a more serious cause of loss than has canine distemper, in the states named. Of the dogs the author has examined, infestation has been highest among those from Florida, reaching 80% in these.

As yet little is known concerning the pathology of the disease. The larvae appear, however, to produce marked degenerative changes in the blood and the adult worms when present in the heart in large numbers sometimes interfere seriously, even fatally with the function of that organ.

Under favorable conditions, the infestation spreads rapidly in a kennel, that is, where mosquitos have access to the dogs. In a single experiment, 11 non-infested and one infested dog were confined in screened quarters where fleas were very numerous. During a period of three months, no extension of the infestation occurred. However, in a similar kennel, not screened, where there were three infested dogs and 19 non-infested dogs, in a like period the infestation had extended to all the animals. In heavy infestations, it is not unusual to find the larvae present to the number of 150 in a single drop of blood.

The symptoms presented are variable, and a positive diagnosis can be made only by microscopic examination of freshly-drawn blood. The most common symptoms noted are: Lack of general condition, rough coat, lack of endurance, and a lazy attitude. In more severe cases, there is extreme weakness, a progressive anemia and often a chronic indigestion, accompanied by ascites and generalized dropsical swellings.

Cases of light infestation show very mild symptoms. In many cases they are entirely overlooked. Such a dog may go on indefinitely and show no ill effects from the disease if he is well cared for. However, there is always the danger that

*Notes from a discussion by I. M. Hayes, at the Ninth Annual Short Course for Graduate Veterinarians at the Alabama Polytechnic Institute, Auburn, February 6-11, 1933.

the intermediate host is continuing to transmit larvae into his blood stream, when eventually the infestation will become heavy. Also a dog with a light infestation cannot be in the best of health. The toxic metabolic products of the parasite produce degenerative changes in the blood and this lowers the general resistance, rendering the animal more susceptible to other diseases.

The treatment for this condition has been very unsatisfactory heretofore. Dogs taken to northern states out of reach of infested mosquitoes usually recover in a period of five to six months, provided the infestation is not so severe as to kill them promptly, and provided also that they are well cared for and particularly that they are well fed and not over exercised.

The larvae cannot be reached by the ordinary anthelmintic administered internally, and probably would not be harmed by them if the usual anthelmintics could be brought in contact with them. They will live in blood withdrawn into a test tube (citrated) for a period of two days and they live for this period in such blood in spite of the addition of oil of chenopodium, carbon tetrachloride and tetrachlorethylene, etc. In fact, their death was not materially hastened by placing a drop of blood in a dram of pure tetrachlorethylene.

Three groups of remedies seem of value in a clinical investigation undertaken in the Veterinary Department of the Alabama Polytechnic Institute:

1. Oil of pennyroyal, citronella and other mosquito repellants if persistently used on the dogs and about the kennels lessen infestation.

2. Creosote and like agents are useful in repelling mosquitoes and perhaps also when used internally.

3. Antimony, tin, arsenic and bismuth compounds given intravenously are of value.

Of these, the effects of tin and bismuth compounds proved only palliative. No cures were effected by them. The administration of neoarsphenamine frequently resulted in improvement in the case, and in rare instances completely cleared them up.

Antimony compounds regularly caused the larvae to disappear from the peripheral circulation and on autopsy the adult worms also were destroyed. A disadvantage, however, is that in destroying the larvae the antimony salts all too frequently destroyed the dog also. This was particularly true of antimony potassium bitartrate (tartar emetic). This agent unfailingly destroyed the larvae, but with far too great frequency the patient also succumbed from blood clotting.

A considerable number of antimony salts were tried. They all possessed the weakness of either frequently or occasionally causing blood clots, which resulted in the death of the animal. An effort was made to prepare an antimony compound that would be neutral or alkaline in reaction. The ordinary compounds are acid in reaction. Alkaline antimony salts properly prepared and administered in a sterile solution do not cause blood clotting and death of the patient. In 200 cases in which one such product was used, there were but six deaths and all of these were cases of extremely heavy infestation and all the evidence was that the deaths were due to a toxemia, the result of the disintegration of the dead larvae in the blood stream.

The salt is administered intravenously in sterile solution. In no case in the 200 experimented upon was more than three injections at 48-hour intervals required to completely eliminate larvae from the peripheral circulation, and in all the cases except the six that died, the animals made an extremely rapid recovery and regained their strength and condition. Strangely enough, during a period of three months since the last of these experimental cases were treated, and nearly a year since the first of them were treated, not one of these dogs, so far as known, has suffered a reinfestation, although they are in localities and even in kennels where this parasitism is

rife. It is possible that the absorption of the killed larvae results in an immunity to infestation for a year or longer.

The antimony salt is made up in a solution containing one grain to the cubic centimeter and the maximum dose for a dog appears to be about 1cc of the solution for ten pounds of weight. It is better, however, to begin with a dose considerably under the maximum, since upon the condition of the dog depends to a large extent the reaction to the injection; which may be severe. Dogs that are badly out of condition, particularly suffering from acute anemia, should be built up with liver extract or iron cacodylate and good food, particularly raw meat, for a few days before being treated for filariasis. It is best then to start with about half the maximum dose, or say 3cc for a 60-pound hunting dog. If no severe reaction is caused within 24 hours, the injection should be repeated, 3cc being given. Again, if there is no reaction in 24 hours, 4cc should be given. A maximum of 1cc for 10 pounds weight should not be exceeded.

When a marked reaction is obtained, a dose of the same size should be repeated after 48 hours, and if the larvae still persists in the blood, a third dose should be given after a second lapse of 48 hours.

Not infrequently all larvae will disappear within 24 hours after the first injection that is followed by a marked reaction. Injections too small to cause a marked reaction in the animal seldom effect the number of filaria in the blood.

The treatment of filariasis with antimony is a strictly hospital procedure. The dog should be under the constant observation by a veterinarian before, during treatment and for a short time afterwards.

The symptoms of a reaction which may be observed immediately following and for twelve to 16 hours after treatment are: Vomiting, slight bloody stools, loss of appetite and an increased redness of the mucous membrane of the mouth. Also there is an elevation in temperature. Such symptoms are not regarded as serious. However, if these symptoms persist more than 16 hours, and in addition the dog becomes languid, a severe icterus develops and yellow pustules appear on the body, this is considered serious.

In this condition sodium hyposulphate given orally in one-dram doses four times daily, or given in ten grain doses intravenously, will be found beneficial. Also tanic acid given per os four times daily in five-grain doses may be of value. Symptomatic treatment also is indicated in such cases.

It is advised that every case of filariasis should be treated only at the owner's risk, for the reason that it is impossible to determine how many adult parasites may be present, and any case may have a sufficient number to produce death of the animal from toxemia when the parasites are destroyed and absorbed.

While this clinical investigation has shown definitely that in the antimony salts we have an effective remedy for the most serious plague of hunting dogs in the south, much yet remains to be done to perfect the treatment and obtain, if possible, a combination of antimony salts that will be regularly neutral in reaction and safe to use intravenously in the dog. The experiments are being continued with good prospects of success at an early date.

In the clinic at the short course, ten dogs in which filaria larvae were demonstrable in the blood, were presented. Six hounds and three bird dogs were from a single kennel, and the tenth case was a small Setter from another kennel.

The hounds and bird dogs required from three to five injections before the larvae disappeared from the blood, but the blood of the small Setter was cleared up by a single injection of 4cc. The hounds showed only a mild reaction to the treatment. The small Setter, how-

ever, suffered greatly from shock and saving her was almost despaired of, but under symptomatic treatment she recovered.

All ten cases were reported well and sent home one week after the clinic.

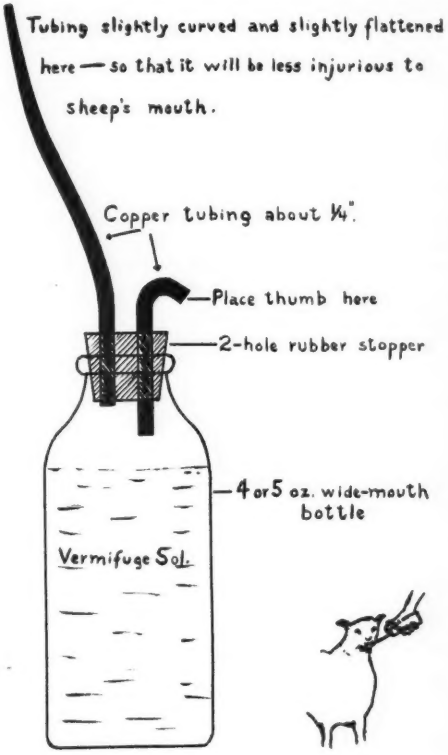
DRENCHING BOTTLE FOR SHEEP

In administering liquid vermifuges to sheep, I have found the conventional apparatus, consisting of a funnel, a length of rubber tubing, and a metal nozzle, to be inadequate. In the first place, an additional assistant is required to help manipulate the apparatus. In the second place, unless this assistant is better trained than the average farm hand, a great deal of attention is required to see that he does his job properly. According to my experience, if you give him the job of holding the funnel, and pouring the solution into it, he is likely to pour too fast or at the wrong time. If, on the other hand, you give him the job of holding the nozzle in the sheep's mouth, he is likely to raise the head too high or hold the nozzle in the wrong place.

In an attempt to dispense with this cumbersome, and, to me, quite unsatisfactory apparatus, I have attempted to use a small, long necked condiment bottle. I found this rather difficult to introduce into the sheep's mouth, and that its large size held the mouth open so wide that a considerable amount of the solution often was spilled.

Finally, I hit upon a satisfactory apparatus, a rough sketch of which is shown. This comprises a wide mouth bottle of suitable size, a two-hole rubber stopper to fit, and two lengths of copper tubing, 3/16 in. or ¼ in. inside diameter. One piece of tubing, 4 in. or 5 in. in length, is bent at a right angle in the middle, then introduced through one hole of the stopper until it projects about 1 in. beyond the inside end of the stopper. The other piece is bent at about 15 degrees at a point two inches from where it enters the stopper. The other end is well smoothed with a file, moderately flattened, by holding it on a board and hitting it with a hammer, then curved, as shown. It projects only a fraction of an inch beyond the stopper.

When the bottle is tilted up in a pouring position, the solution will run freely out of the long tube, and air will enter through the short tube. At intervals between swallows, the flow is checked by pressing the thumb against the end of the short tube.


Tubing slightly curved and slightly flattened here — so that it will be less injurious to sheep's mouth.
Copper tubing about ¼".
Place thumb here
2-hole rubber stopper
4 or 5 oz. wide-mouth bottle
Vermifuge Sol.

This apparatus is very inexpensive, convenient, and easy to assemble. It is easy to manipulate, and distresses the sheep very little. It has proved so satisfactory to me that I pass the idea along to others, who might be interested.

John M. Coffin.

Peekskill, N. Y.

Nonspecific Cellular Therapy

By JULIUS MAURER, White Plains, New York.

QUI bene noscit, bene medicat. That is the principle in all our therapeutical procedures. Success in medical practice can be attained only by the one who recognizes the nature of a disease, selects the right medicine, prescribes the proper dose and orders it to be given at approved intervals. Theoretically perhaps only specific therapy should be used to combat infectious diseases. Practically, however, specific therapy can be carried out in only a few cases. Unfortunately, we have specifics or anti-toxins for only a few infectious diseases. The success of quinine in malaria, mercury in syphilis, various coal tar dyes and arsenicals in certain protozoal diseases and of the various anti-toxins has resulted in numberless attempts to find new agents to combat disease organisms or neutralize their products. Certain German professors however, have followed a different line of attack on disease, and instead of attacking the cause of disease have confined their efforts entirely to strengthening and supporting Nature's efforts to get rid of the invaders and repair the damage. After years of research, they have produced a new treatment that they call "unspecific (or nonspecific) cellular therapy."

To understand the nature of the nonspecific cellular therapy, we must enter to some extent into the nature of the diseases and natural healing processes. In diseases of the organs the cells that function specifically, the parenchyma, for example the renal cells, or the liver cells, the cardiac muscle or muscle cells are attacked. The natural healing process, however, does not arise from the parenchyma, but from the cells of the middle germinal layer, the mesenchyma. In this are included all white blood corpuscles, the connective tissue cells, those of the reticular endothelium of the liver and certain cells of the intima of the arteries. Immunizing bodies are formed in the cells of the lymphatic glands, in the bone-marrow, and in the spleen.

This mesenchymal cell complex, which is the principal disease prevention apparatus of the organism, bears an intimate relation to the vegetative nervous system (vagus and sympathetic), As a result, disease of the organs always has an irritating effect upon the vegetative nervous system (increased or decreased tone of the vagus or sympathetic). This must furthermore produce an effect upon the action of the endocrine glands. For this reason, there exists a constant alternating flow in the organism from the diseased cells to the healthy and vice versa.

The mesenchymal protective apparatus, the vegetative nervous system and the endocrine glands with their reciprocal relation and their combined action, have by far the predominating influence upon the healing process.

Nature attempts to fight all diseases on the same principle and with the same preventive apparatus, regardless of whether it is a disease of the heart, lung, or liver, etc. For example, consider fever, a healing process in so many sicknesses. We can by analogy construct the plan for a successful therapy. I should like to emphasize once more, that Nature tries to heal the damages of the most varied sicknesses in accordance with laws that remain the same, and with the same forces, and in this we should as far as possible support Her with our therapy. We also must succeed in attaining the same results in the most varied diseases with the same treatment, let us say for example, by injections of a medicament, which stimulates the cells of the preventive apparatus to the greatest possible action (cellular therapeusis). Expressed in other words, we must be in a position to heal most of the infectious

diseases with very effective cellular therapeutical means. Professor Dr. Pfeiler of Jena, after years of research has succeeded in finding such a preparation in Cejodyl and Jodcechinol.

Cejodyl, according to the statement of the manufacturing firm Atarost in Rostock, Germany, consists of cerium iodide, iodide of arsenic, monomethyldisodium-arseniat, a reducing agent and an organic acid. The two principal components of Cejodyl are iodine and cerium. The characteristics of the first are familiar enough. In former years iodine was used almost exclusively externally, later, however, it has been included more and more in internal mdicine. Cerium has a particular affinity for the nervous system. It increases the action of the iodine, in that it prepares the cells for receiving it. Cejodyl has also been combined with other substances, thus with terpenes. Oil of turpentine, one of our oldest medicines, stimulates blood formation in the organism, but in particular leucocytosis, the formation of resisting substances and the agglutination of poisons.

Cejodyl and Cejodyl-Terpen are clear, sterile liquids, slightly yellow after repeated exposure to the sunlight and air. They will keep indefinitely, provided the bottles are kept well closed after using. If the exposure to air is long and often repeated, the Cer-Iodine composition gradually decomposes, the solution becomes darker, has a strong odor of iodine, and should not be used because of the danger of causing local necrosis. The Cejodyl preparations are usually injected intravenously but in small doses they may be given subcutaneously or intramuscularly.

The following doses are prescribed for intravenous injections: Horse and cow 10 to 30 cc.; colt, calf, sheep and goat 5 to 15 cc.; large dogs 2 to 10 cc.; small dogs and cats 0.5 to 2 cc. The injections may be repeated without having even the slightest injurious secondary effects. However, one should not make repeated injections in the same place, but should change as much as possible (the other side of the neck in the horse, the other leg in the dog, etc.)

The dose for subcutaneous injection is: Horse and cow 1 to 2 cc.; colt, calf, sheep, goat, large dog and hog 1 to 2 cc.; small dogs and cats 0.5 cc. If larger amounts are to be given subcutaneously or intramuscularly, divided doses are injected in several different places.

Jodcechinol is a dark brown cerchinolin compound, which contains iodine in the finest colloidal form. In contrast to Cejodyl it is used most often subcutaneously and intramuscularly, but may also be injected intravenously.

Doses for subcutaneous or intramuscular injection are: Horse and cow 5 to 8 cc.; colt, calf, sheep, goat and hog 2 to 5 cc.; large dog and pig 2 to 3 cc.; small dog, cat and poultry 1 to 2 cc. The dose for intravenous injection is: Horse and cow 10 to 25 cc.; colt, calf, sheep, goat and hog 5 to 10 cc.; large dog and pig 5 to 8 cc.; small dog, cat and poultry 2 to 5 cc.

For nearly two years I have been using Cejodyl and Jodcechinol preparations, and both have become absolutely indispensable to me, because of their exceptional, I may even say, phenomenal effects. These effects are: Germicidal, neutralizing poisons, acting as an alterative, quieting and supporting. Very striking is the return from fever to normal. The characteristics mentioned, when embodied in a single medicine, insure for it unlimited possibilities for application. In particular I should like to refer to the Cejodyl-Terpen, which I have used much recently. Terpen seems to exercise a favorable influence upon weakness of the heart, which is often present in septic conditions. It also motivates to a large extent the leucocytic apparatus and stimulates the oxidation processes in the cells. It relieves the spasm of the bronchial muscles in respiratory affections, thus releasing the secretions. Therefore, it is particularly advantageous for all acute affections of the respiratory apparatus. It produces a very noticeable quieting of the breathing and a striking

improvement in the subjective state. Cejoydl-Terpen embodies the most active therapeutical principles for the treatment of infectious and inflammatory diseases.

Some examples from my practice follow: This nonspecific cellular therapy can be applied in the same manner for the most varied acute affections. I have considerable work with riding horses, a large part of which possess a low degree of resistance to diseases. They are afflicted now with this, and then with that, which would not affect a robust horse. Thus I am frequently called to patients who show the following symptoms: Weariness, poor appetite, rigor, somewhat increased pulse frequency and often a considerably elevated temperature. We call this a prodromal fever, which may last for several days, without definite symptoms of the affection of any special organ. Up to several years ago no medicines were used in these cases. One left the patient in good care, waited to see if a localized organic disease would develop from this prodromal fever. Evidently not very much was done to favorably influence this initial stage of a disease and to prevent its further development. In such cases many veterinarians formerly used and unfortunately even today still use, febrifuges in large doses to reduce the fever. I consider such treatment positivly wrong. The fever is not the cause of the sickness, but, as I have mentioned before, it is the natural defensive reaction of the organism as a result of a certain irritation. Therefore, it should be fought only when it becomes so high that it endangers the life of the patient, and even then not with antifebrin, which, to be sure does temporarily reduce the high temperature, but may altogether spoil the appetite, which is still fair.

I inject a large dose of Cejodyl in all cases of prodromal fever and thereby attempt to cope with the initial stage of the disease, which is still unknown to me. This attack upon diseases very early in their course, even before the etiology is recognized, is very valuable to the veterinarian. I know of no means which improves the subjective state of the patient in such a short time, and which works so reliably in all these cases as Cejodyl.

The same may be said of the Cejodyl compounds for all infectious diseases of known origin, like strangles, influenza, pneumonia and gastro-enteritis. Formerly I used serum at the first apparance of strangles and obtained fair results. Nevertheless, in many cases an abscess of the submaxillary lymphglands followed. This occurs rarely since I am using Cejodyl-Terpen. I inject 20 to 30 cc. Cejodyl-Terpen intravenously, after which I am always able to see a decided improvement. Usually 2 to 3 injections suffice, only two horses have had to be given five and only one six doses. The gratifying part about it, however, is, as has already been mentioned, the fact that only in the rarest instances does abscess formation take place, and the duration of the disease is noticeably shortened.

Uncomplicated influenza for the most part is non-fatal. Under favorable hygienic conditions, it terminates in recovery within a short time. Nevertheless, it is advisable in the initial stage of the disease to do everything possible to encourage a quick recovery. Neoarsphenamine has never yet given me positive results in influenza. The best treatment is that of influenza serum and Cejodyl-Terpen. The latter within a short time removes the lassitude and prevents weakening of the heart, which otherwise is common in this disease, and hastens absorption of the edema. If I have no influenza serum handy, then I treat exclusively with Cejodyl-Terpen. Success is not lacking.

A Hopeless (?) Case of Pneumonia

Every veterinarian knows that pleuropneumonia with high fever, great infirmity, and rapid increase of the exudate leads to death in the majority of cases. Of several such cases which I treated during the past year, I shall describe one in some detail. The horse had been brought here from another state. It arrived very ill and in addition was treat-

ed by the trainer for several days. My examination showed double pleuro-pneumonia, with an accumulation of the fluid in the lower third of the chest. The patient was very weak; had high fever, and the fluid in the thoracic cavity increased rapidly. The treatment consisted of daily intravenous injections of Cejodyl-Terpen, in addition to which Jodcechinol was injected subcutaneously. Alternately I also applied Priessnitz compresses and spirits of mustard around the chest.

The great dyspnea soon made withdrawal of the exudate necessary. I drained off 25 quarts of hemorrhagic fluid from the right side of the chest. About 500 cc. of this fluid I used for autoserum therapy; which on one hand is recommended by many veterinarians, and on the other criticized by others. For five days 100 cc. of the withdrawn fluid was injected daily subcutaneously. The patient recovered gradually without relapses and no one seeing the horse today could believe that at the time all ridiculed me for entertaining a hope for its recovery. This was my severest case of this nature, and I am firmly convinced that the Cejodyl-Terpen and Jodcechinol saved the life of the patient.

Other Infections

In foreign periodicals, one reads a great deal about the use of Cejodyl and Jodcechinol in cases of retained afterbirth, dystocia, metritis, vaginal and uterine necrosis, as well as in omphalophlebitis. All opinions are favorable and my experience fully supports them. In as much as I discussed treatment of the retained afterbirth and metritis (VETERINARY MEDICINE, February, 1932, page 72), I shall not dwell on it again. But at this point I should like to advise all veterinarians having to do with umbilical trouble in colts and calves, to try Cejodyl and Jodcechinol. They will be surprised how excellently these medicaments work.

Post Operative Treatment

I use Cejodyl and Jodcechinol before or after all serious operations, like cryptorchid and hernia operations, to prevent peritonitis and to obtain a primary healing. They are often life savers in infected joints and infected tendon sheath wounds. They hasten recovery in phlegmon and they have always given me excellent results in foot-rot.

Valuable in Laminitis

I have wondered why Cejodyl is not used in laminitis. Let us review once more the principal characteristics of Cejodyl: It is germicidal, antidotal, antipyretic, sedative and alternative.

Laminitis is a sequel disease of autointoxication after parturition, influenza, pneumonia, digestive trouble, etc. Should not Cejodyl, with the characteristics already mentioned, bring about most favorable results in this disease? Of six cases, all of which I treated within a short time with Cejodyl, and all of which recovered, I shall discuss one in detail.

In the winter 1930 I was called to see a very valuable mare which had been imported a short time previously from Ireland. The owner said that in spite of her good appetite, the mare was losing weight and that she had a fondness for eating manure. The mare's coat was dry and hard, and in spite of good care. Also notwithstanding she was only five years old, she gave a strikingly tired impression. The clinical examination revealed little of a positive nature. The microscopic examination of a sample of feces showed a heavy infestation of strongyles. After two worm treatments within a period of eight weeks, the microscopic examinations of the feces for worm eggs remained negative. The mare continued to eat well, and gained weight after the strongyles were removed. Occasionally there were indications of slight indigestion, which, however, lasted but a short time. The mare was not a healthy horse; she remained flabby, poor in the coat, and ate the manure as before. I treated her with arsenic-strychnine tonic, powdered milk with cod liver oil and Laptovet, but without visible improvement. I hoped that going onto pasture in the spring might help my patient. In March the mare suffered an attack of urticaria.

One day in April the owner telephoned me that the mare was dying. Since my office is about 30 miles distant from the estate concerned, it was about one hour before I arrived. The scene was a serious and yet comical one. The patient stood dripping with perspiration and trembling. The front legs were placed far forward and the hind legs were well under the body. On each side, four men, using all their strength, tried to keep the animal standing. On account of the general excitement, it was not possible to get a history, neither was it necessary, since the symptoms were recognizable at first glance. I learned that the mare, in spite of the fact that she was always fed with particular care, and that she had been ridden moderately every day, had suddenly become ill on that particular morning.

I sent the people out of the boxstall in the hope that the patient might lie down and rest. But she remained standing, shaking violently and could not be moved from the spot. There was strong pulsation of the digital arteries, edema round the coronary bands, increased warmth in the feet, as well as great pain when the hoofs were tapped. The toes were taxed as little as possible. Raising a foot was impossible. All four feet were affected, but the state of the inflammation was much more pronounced in the front legs than in the hind. The general condition was much disturbed; the temperature 105° F., the pulse 100, and respiration was very much quickened.

Prognosis was doubtful, since the attack was very severe and the patient very much excited, and as previously stated all four legs were affected. The treatment was begun with Priessnitz compresses around the chest and ice-cold hoof compresses. In addition I injected 30cc Cejodyl intravenously. The mare quieted down and in the course of the next hour laid down. In the evening the temperature had fallen to 102°F., and the pulse frequency had fallen to 70. I injected Cejodyl once more (25cc) and gave the same dose on my next visit the following day. The hoofs were always kept wet. After only three days I pronounced the patient well. This mare has had no relapse since, and in the course of the spring and summer developed into a good riding horse.

In the therapy just described I purposely omitted the old treatment of laminitis with venesection, arecoline and antifebrin and yet the results in this and the other five cases were excellent. But I only did this for the sake of my experiment, so as to ascertain whether Cejodyl injections are of value in the treatment of laminitis. But I do not wish to be one-sided in my therapeutic procedure and since I now know the value of Cejodyl; in the future I shall carry out the following treatment in laminitis: Venesection, injections of Cejodyl, arecoline, first ice-cold and later warm hoof compresses and eventually Priessnitz compresses around the chest. But I shall consider Cejodyl injection as the most the important part of the treatment.

Experimental Use

I am also trying Cejodyl and Cejodyl-Terpen for the treatment of other diseases such as actinomycosis, muscular and articular rheumatism, mastitis, periodic ophthalmia, azoturia and heat stroke. The results I shall publish later, but this much can be said at this time: Cejodyl has already rendered me valuable service in the treatment of azoturia. Unfortunately, I have at the present time no op-

Tetanus in a two-weeks-old colt.

portunity for applying Cejodyl and Jodcechinol to dog and cat practice. But I have lying before me reports of European veterinarians in regard to the use of these preparations in cases of pneumonia, gastro-enteritis, eczema, distemper and after operations. All of them give a very favorable opinion. Jodcechinol is much preferred in small animal practice, since in contrast to Cejodyl it is mostly given subcutaneously and intramuscularly.

Conclusion

For more than two years I have studied the nonspecific cellular therapy thoroughly and tested it practically along the most varied lines. I am sure of my subject when I say that I know of no agent which can be used to even an approximate extent in veterinarian practice with the same unquestionable results as Cejodyl, Cejodyl-Terpen and Jodcechinol. I should like to draw the attention of all veterinarians to it and ask them to test my contentions.

But I should not like to be misunderstood because I use Cejodyl, Cejodyl-Terpen and Jodcechinol in so many different diseases. I use it everywhere that I believe I can favorably influence the course of the disease by stimulating the action of the natural defensive apparatus in the organism. I do not regard it in any sense a cure-all. In addition to nonspecific cellular therapy, I also carry out the specific treatment where one is possible, for example I use serum or vaccines when they can be had for the disease to be treated. I lay a great stress upon symptomatic and local treatment, where either or both can be used, and in addition I employ Cejodyl or Cejodyl-Terpen and Jodcechinol to hasten the healing process, or in cases where a specific or local or symptomatic treatment does not bring the desired results, to achieve a cure through the nonspecific effects of the stimulation of cellular therapeutics.

DEODORIZING MY FIRST SKUNK

I had heard and read about this operation, but not expecting to perform it, I had given it little thought; but when I answered my telephone and an inquiry about operation on a skunk was made, I referred at once to Doctor Atwood's article in VETERINARY MEDICINE (November, 1932, p. 466), I looked it up. He performed the operation through the rectal wall and grasped the orifice with forceps, as I thought to help hold them while operating, but I can see now it served also to close the duct which is of supreme importance.

I was going to operate on each side of rectum so as not to injure the rectal wall, but in this way I had to cut the duct and I also injured the wall and had to sew it up, so next time I am going to operate through the wall.

I had it in my mind that if I ever got the animal to sleep, all would be lovely, but I had failed to realize that passive pressure on these glands will expel the contents as surely as the voluntary act of the animal.

Before starting the operation I opened the windows and the door; a good breeze was flowing through and the odor did not bother me much while operating but OH MY, uptown people (to the leeward) were looking at each other and wondering; one block away the railway agent had his men searching the depot trying to locate the skunk, and even the patrons of the "talkie" show in the next block got it.

When I went home, by leaving part of my clothes outside, my wife let me stay in the house. I used Life Buoy soap but the odor clings. The next morning I started to put on the same socks (which were yarn) but instead I dropped them in the fire.

By leaving the windows in the hospital open all night with frequent spraying the odor there was not so bad next day. I used a spray made up of Paradichlorbenzine 14 ounces, methyl salicylate one ounce and kerosene sufficient to make a gallon. This can be made weaker

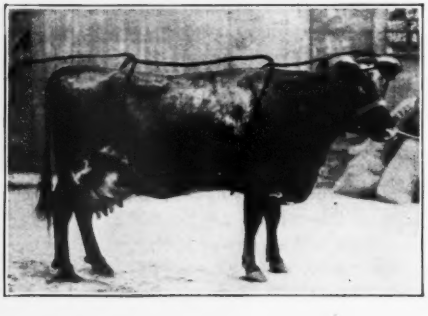
or stronger as desired. I use lots of this as a fly spray and to deflea dogs. A few puffs from a spray gun will bring fleas to the surface and another puff or two will kill them.

An old experienced trapper was in next day and he said the scent would stay with me for several days, but he was a little surprised that it was not any worse so soon after the operation. I will call attention to my two mistakes for the benefit of those doing their first operation. First, I tried to anesthetize the animal in original box with rain coat over the box. After using a quarter of a pound of ether, I took it out and put it in a tight box. They will not bite as I learned later. Second, not grasping with the forceps the orifice of the odor glands and thus preventing the escape of the scented fluid. These orifices can be seen easily just inside the rectum on each side.

Asheboro, N. C. B. M. Weston.

CASTING THE OX

One of the most efficient methods of casting the ox is that in which a long rope is tied around the body of the animal in a series of half hitches. This method is so well known that a description of it is unnecessary. The question has arisen as to the physiological reason for the profound effect tightening of these half hitches has upon the animal. Why should the ox, undergoing this experience, sag backwards, buckle at the knees, and slowly sink to the ground, lying there with scarcely a struggle? Also, why should these effects be produced so easily in the ox, and not in the horse?



The thorax of the ox is articulated in a different manner from that of the horse. The joints between the ribs and the costal cartilages and the sternum, are much more developed in the ox than in the horse. Because of this, steady pressure applied around the circumference of the thorax of the ox results in a considerable diminution of its caliber, while the thorax of the horse is relatively incompressible. This compressing action of the thorax of the ox, together with the forcing forward of the abdominal vescera, under pressure of the half-hitch about the flanks, results in two distinct conditions.

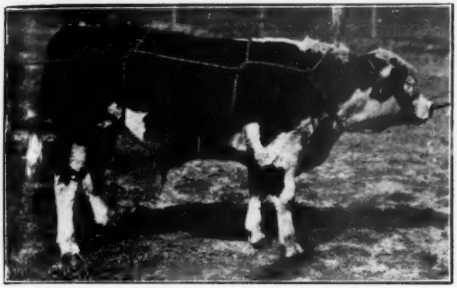
The lungs are compressed and their action to a certain extent suspended. Oxygen starvation with carbon dioxide intoxication ensues, which tends to produce unconsciousness. This is the first condition. While the lungs are being compressed, the heart and great blood vessels are similarly effected. The vena cava, having much less pressure than the aorta, suffers most. The blood coming into the anterior vena cava is dammed backwards, resulting in a congestion of the venous system of the brain. Possibly other vital nerve centers are also effected by the pressure upon the posterior vena cava, but the congestion of the brain is no doubt of most importance. This is the second condition, and also tends to produce unconsciousness.

The total effect of these two conditions is to produce fainting or unconsciousness. This requires several seconds to be produced, and comes on relatively gradually. The onset is frequently resisted by the animal and many will struggle for a few moments. If a steady pressure is kept upon the rope, and the half hitches are correctly placed and adjusted so that they tighten uniformly, this period of excitement is very brief, and soon the ox assumes the recumbent position.

Because of the physiology of this manner of casting the ox, it is not considered

advisable to cause the animal to remain recumbent by continued pressure upon the half hitches. Instead, it should be secured in some other manner by additional ropes as quickly as possible, and then the pressure upon the half hitches released.

It should be stated that this method of casting should be used with extreme care in the bull. Instances have been reported



of injury to the penis that ruined the animal as a breeder by the half-hitch passing around the flanks and under the sheath.

It is interesting to note that pressure upon the thorax and abdomen of the human produces an effect similar to that in the ox, and is used to quite an extent in wrestling.

Ames, Iowa. Geo. R. Fowler.

CASTRATING THE CRYPTORCHID BOAR

A veterinarian must know how to do many little things in which there is not much money; that is for which he must charge a very small fee.

In my practice, I early learned to castrate a ridgling horse, but for a good many years I could not make much of a success of castrating a ridgling boar pig; an operation I was occasionally called upon to do. I think I failed to find the testicle in 50% of my early cases. It occurred to me that as I could not so often find the gonad by manual exploration that possibly I could see it through the opening. By this method I can locate easily and quickly either one or two testicles in the abdomen of a pig.

The animal is hung up against a wall having first been fasted for 24 hours. The incision is made about two and one-half inches long in the belly parallel to the sheath, from two and one-half to four inches from it; between the sheath and flank, the usual location for the incision in castrating ridgling hogs. The edges of this incision are held apart and the testicle can usually be seen at once. In case the bladder is full it is pushed to one side when the testis may be seen under it and withdrawn with fingers and severed. In case of a double ridgling, it is only necessary to make the incision a little longer and both organs may be removed through the one incision.

Tupelo, Mississippi. J. T. Alston.

DISPLACED ABDOMINAL VISCERA IN A DOG

Subject: A small fox terrier female, 11 months old.

History: Choked on a piece of meat. Presented almost immediately: Had been hit by car eight months previously.

Symptoms: Shallow difficult breathing, temperature normal, pulse accelerated, appearance of suffocating.

Treatment: Apomorphine which produced attempts to vomit, without succeeding. Passed the stomach tube and poured in a little water but the return flow was blocked by chunks of meat. The dog died immediately.

Postmortem findings: The thoracic cavity contained a large bloated stomach just anterior to the diaphragm. In front of the stomach on the floor of the cavity were all the intestines. The spleen was attached to the stomach, also to one large lobe of the liver. The lungs were atrophied to practically nothing. The heart was pushed tight against the top and side of the cavity. There was a rent with healed margins of over an inch long in the diaphragm. The remarkable thing is, that the dog lived eight months in this condition.

L. H. Hartman.

East Liverpool, O.

Resumè of Veterinary Literature on Perlacar

By ALFRED MUELLER, Perleburg, Germany

FOR a long time unthriftiness has been looked upon as the principal effect of parasitisms in animals. In the case of many internal parasites, it is almost the only symptom of parasitic infestation that the animal manifests, and naturally the unthriftiness has been looked upon as an effect of parasitic infestation. The research into the cause and effect of animal parasitisms that has been going on all over the world has recently cast doubt upon this theory and parasitologists are coming more and more to suspect that unthriftiness is perhaps as often or more often the cause of parasitisms than is parasitisms a cause of unthriftiness. In other words, it has been shown that nearly all animals possess certain and under favorable conditions effective powers of resistance against many of their parasites, and that at least in very many instances it is only when the animal's resistance is lowered as a result of an improper or insufficient diet, over work, exposure, abuse or infectious disease or other injuries that the parasites are given the opportunity to invade the host in numbers sufficient to be materially harmful.

In the therapeutics of animal parasitic skin-diseases, A. Mueller[1] introduced, in 1926, an organic preparation by the name of PERLACAR* which, deviating from previous practice, does not destroy the parasites by external application of medicaments, but by increasing specifically the ability of the defense organs of the skin. A. Mueller considers the influence of the antiparasitic medicaments against the follicular mite as insufficient, and attributes the vital importance to the change in the host's disposition towards the parasite. Disturbances of nutrition during the growth-period, unsanitary living conditions of the animals, parasites of the skin and intestines, and last, but not least, an inherited disposition, weaken the resistance of the animal against the parasites and enables their free propagation.

The friction of medicaments into the skin may just as well be considered as a direct influence on the parasites as well as a non-specific protoplasma-activation. The frequent failure of the usual mite-killing remedies perhaps may be regarded as a non-affected change of disposition; whereas this change of disposition required for the recovery, in rare cases, takes place without any further intervention, leading to a spontaneous cure.

It was the aim of A. Mueller's work to bring about with regularity the required alteration of the disposition or the specific protoplasma-activation in as many cases as possible. As the result of this research, he finally produced an organ-extract which possesses all the desired qualities in a high degree. Under the name of Perlacar it is put on the market by the Vaccine-Works in Perleburg and represents the realization of a completely new method in the therapeutics of the different skin diseases. Taking into consideration the time passed for observation since the introduction of the preparation to the veterinary profession, and considering the great number of animals treated in the meantime, an examination of the present work may give evidence as to its value and importance

*PERLACAR is said by the producer to be a sterile organic preparation, (an extract from skin tissue) to be injected subcutaneously at intervals of 2 to 4 days, and the injections should be continued until the inflammation has disappeared and the hair starts to grow again. Usually 3 to 5 injections are sufficient.

Perlacar is recommended by the manufacturer for the treatment of all skin diseases, especially for the eruptive stage of follicular or red mange in dogs. Also for acute or chronic eczema, mange eruptions, falling out of hair, or poor hair growth. Percalar can be used on any animal. It is said to quickly alleviate inflammation, the skin becomes smooth and the hair soon grows again. In using Perlacar, all other forms of treatment are dispensed with. It may fail occasionally, as may every other therapeutic measure, but it excels all other remedies in the simple manner of administration and in the surety of success. Because of the method of administration, it is especially useful in cases that are treated at home, or brought to the office for treatment. It is a preparation reserved exclusively for the use of veterinarians.

for treating the different skin-diseases of domestic animals.

Mueller reports on follicular cases, of 42 dogs suffering from various kinds of follicular mange, 40 were cured—an efficiency of 95%. Two of them died intercurrent. Five relapsed after the course of 2 to 3 months. Viewing these first experiments, it is shown that only a prolonged course of subcutaneous injections will lead to the desired effect and that the treatment should not be interrupted, or broken off, too early. This has been emphasized again and again by subsequent reporters. Furthermore, the extract manufactured at that time in small quantities was not standardized, resulting in some cases in a delay in recovery. Notwithstanding this unfortunate circumstance, the above mentioned high number of cures was obtained.

The subcutaneous injections of Perlacar at that time produced a considerable and painful reaction, which, however, was never dangerous. After five days the itching-irritation of the skin became less, the signs of inflammation diminished and the appetite improved. After 14 days the dense scurf disappeared; in cases of a pustular nature, generally no fresh pustules appeared after that period, while new growth of the hair could be observed the third and fourth week of treatment. The treatment is finished when the hair is faultlessly regrown.

In March, 1928, Hawich[4] had the opportunity of treating a pack of 84 Greyhounds; all suffering from follicular mange. Forty-seven hounds were in an advanced stage of infection and emaciation. Milder cases showed pustules of follicular mange on the head, along the back and tail, as well as on the front and hind legs down to the toes. Hawich injected Perlacar at intervals of four days, 5cc at a dose. To hasten the hair-growth, Odylen was rubbed in at the same time. On the seventh day after the first injection, the symptoms of irritation disappeared in the milder cases. The third dogs. Bobke[10] compiled details of 36 injection was not necessary in some cases. After 19 days, the hounds had recovered to such a degree that they were scarcely recognized by the owner. After a treatment of 60 days, all 84 Greyhounds were cured of the follicular mange, and the spots which had become hairless were covered with fresh hair. Reports of further examination showed that the Odylen treatment could not have been entirely responsible for the results.

In addition to this first confirmation of the effect of Perlacar against demodectic follicular mange, Hawich first reports its use in the treatment of moist eczema on the back of hounds. Following the first injection, he noticed a checking of the exudate and a beginning of desiccation. In no case were more than five injections necessary for effecting a complete recovery.

All subsequent reports which have appeared in literature in regard to the effect of Perlacar in red mange and in sarcoptic mange confirm experiments made up to now.

Henninger[5] was able to confirm all the previous statements with 30 hounds, which not only were afflicted with both forms of mange but also with general chronic furunculosis of the bridge of the nose. Based upon his experiments with 20 hounds affected with demodectic mange, Berndt[6] comes to this conclusion: "Who nowadays does not apply Perlacar must be reproached with making a great mistake in science." Reinhardt,[7] who in his methods of treatment has not abandoned local treatment in general, sums up his experiences thus: "The cases of sarcoptic and follicular mange as well as eczema dorsi of hounds treated by me have all responded favorably." Steinberg[8] also is able to attain the results achieved by others up to the present and has noticed no unpleasant after effects, provided the animals were allowed to rest after the injection. Reinchenbach[9] had the opportunity of proving the effect of Perlacar against follicular mange in his own fox terrier kennel. He reports a great improvement in the appetite of the

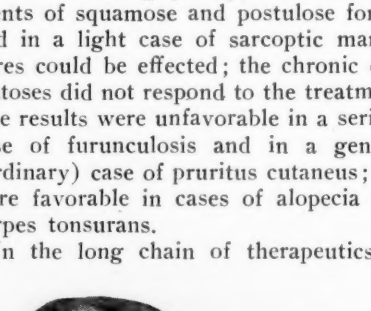
cases of follicular mange in hounds. At the same time these animals were treated with Perugen-Spiritus. The fact that the Prince Charles and Blenheim kennel had first been treated for half a year without success with itch-salve and Lysol baths is of special interest. With only a few exceptions, the 36 hounds were cured after a treatment of three weeks. Only the most severe cases were, for safety's sake, treated a little longer with Perugen-Spiritus. No harmful effects were observed in the treatment of two litters of eight-week-old puppies and even of puppies only two weeks of age. All were given five 2cc-doses of Perlacar. No external treatment was given. The litters were cured after three weeks and showed no injury whatever from the injections of Perlacar.

Diseases of the ear, due to acari, are influenced in the same way by Perlacar as the diseased skin. Foerster[11] with five injections of Perlacar, each of 5cc, attained without any further treatment a complete cure in a case of extreme general debility brought on by otitis ulcerosa. Seven other cases responded, whereas the 8th case was a failure. Rieck[12] applied a Perlacar salve for otitis with great success.

It would be interesting to know the causes responsible for the origin of otitis, also the primary cause of non-parasitic skin diseases. Very frequently the appearance of the disturbance of the skin is not only a local disease, but a symptom of a diseased condition in some other part of the body. For this reason, the therapeutic action of a preparation, the object of which is the activation of already present but dormant forces, or which is to stimulate the organism into creating its own anti-bodies (anti toxins), can be regarded as productive of favorable results if the organism to be treated has not been morbidly disturbed in the play of its functions. It may therefore be readily assumed, as first observed by Scholz,[13] that moist eczema of the dog, otherwise very easily cured with Perlacar, has not been affected by Perlacar injections if parenchymatous nephritis was present at the same time. Similarly a case of the pustular form of follicular mange of the dog proved incurable on account of an existing parenchymatous nephritis, even though a tendency to a new growth of hair was noticeable. Since it may be accepted quite generally that, in case of a chronic disease, the ability of the organism to react properly is disturbed or inhibited by the waste matter circulating through the body, it follows that successful treatments, which presume the cooperation of a healthy organism may be expected only conditionally, (or in a limited way) in a case of chronic disease. Such cases are covered by the conclusions reached by Scholz in his dissertation, towit: "Perlacar has a conditioned therapeutic action." Scholz states further: "Perlacar shows amazing results in cases of moist eczema. After one or two injections the secretion will form an even crust-like film over the inflamed (or affected) skin, thereby creating a very favorable condition of 'healing under the scab'."

While in all cases of acute, peracute and subacute eczemas, in all cases of fresh hairsack (papillary) mite developments of squamose and postulose forms, and in a light case of sarcoptic mange, cures could be effected; the chronic dermatoses did not respond to the treatment. The results were unfavorable in a serious case of furunculosis and in a general (ordinary) case of pruritus cutaneus; but were favorable in cases of alopecia and herpes tonsurans.

In the long chain of therapeutics in



Sarcoptic Mange.

the treatment of dermatosis, Perlacar is one link deserving utmost consideration.

Scholz arrives at his conclusion through his own experiments in a total of 41 cases. These are listed here as follows:

Treated

	Cases	Cured	Not Cured
Eczema	15	13	2
Pruritus cut.	4	1	3
Alopecia	2	2	..
Exanthem	1	1	..
Furunculosis	1	..	1
Demodicosis—			
a—squamose	8	6	2
b—pustular	5	1	4
Sar. Mange	3	1	2
Herpes tons.	2	2	..
	41	27	14

Another dissertation by Mayer[14] of the Veterinary Clinic, Leipzic, shows the following results with small domestic animals:

	Cases	Cured	Improved	Not Benefited
Dem. Mange	14	8	4	2
Eczema	3	3	..	..
Herpes tons.	1	..	1	..
Total	18	11	5	2

On the basis of 30 answers to a questionaire sent to practicing veterinarians and as a result of his own experiments, Mayer arrives at the following conclusions in his dissertation:

"Perlacar is by no means a general remedy, rather does it produces results specifically directed to influence the skin." The favorable results thus far achieved include demodex follicular mange, sarcoptic mange, eczema, sarcoptic mange in cats; herpes tonsurans, eczema, scratches, summer mange, alopecia, canker of the feet in horses and cattle and also papillomatosis in cattle.

The experience with Perlacar injections take the same course in the practice with large animals. After Baustaedt[15] had had success with only three injections in three cases of papillomatosis with cattle, the experiment was attempted to influence scratches in horses by Perlacar injections. As scratches represent also a fibrous epithelium abscess, a favorable influence of the Perlacar injections was to be expected after the experience in papilloma treatment. Reichenbach was able to cure with five injections of Perlacar in the course of five weeks, a case of verucous scratches of both front posterns which, in spite of continuous treatment had continually relapsed under ordinary treatment. The verucous growths disappeared and one of the two extremities healed, whereas the other extremity had become much better at the time the report was made.

In a case of scratches reported by Bartling[16], a horse eight years of age had become unable to work through the extention of the disease. Though all possible remedies had been used without success during the course of two years, steadily growing warty granulomas had developed giving a very unfavorable prognosis even for improvement. Bartling treated the case at regular intervals. With a corresponding after treatment with disinfectant dressings, the patient was given six doses of Perlacar of 20cc each. Within 12 weeks the enormous defect of the skin was almost completely healed and the inflammatory tumefaction of the limbs had reduced to the extent that the horse was able to work again without difficulty. Bartling emphasizes the strong influence of Perlacar injections upon the moistening of the skin wounds and on the healing tendency of the latter.

Riechenbach, Bartling, Jahn and Sternkopf report about chronic scratches. About 3 to 4 injections of 10cc each of Perlacar were necessary for a cure. Also in those cases which formerly relapsed every fortnight, a complete recovery was effected. Quite similar are the circumstances attending the treatment of moist eczema, alopecia and summer mange. Cases are reported by Bartling, Poentsch[17], Scherf[18], Jahn and Sternkopf. Scherf re-

ports that in moist eczema of the horse, he used only two 5cc-doses at intervals of two days.

Satisfactory results have been obtained in the treatment of parasitic skin diseases with Perlacar. In two cases of very extended ringworm in the horse, where weeks of treatment had failed, Poentsch obtained complete recovery with five 20cc, subcutaneous injections of Perlacar at intervals of three days. Jahn reports the cure of 18 cows. Although the cases were of a very severe nature, he was able to dismiss all the animals as cured after three injections of 10cc each of Perlacar given at intervals of three days. Sternkopf also reports a case of ringworm in the cow and attained his cure in the course of three injections of 20cc each.

Mayer mentions in his dissertation, four cases of diseased skin in horses. One horse with summer mange and hairless spots combined with severe itching; two horses with dry eczema and severe itching on both hind feet, dry eczema and severe itching over the whole body; and one horse with large hairless spots on both sides of the body (alopecia). With 4 to 5 injections of Perlacar, all four horses recovered.

Summary

The available literature is sufficiently complete and critical to form a definite and decisive opinion. Accordingly, the Perlacar therapy is indicated in all cases of demodex follicular mange, sarcoptic mange, eczema, alopecia, herpes tonsurans, scratches, and papillomatosis. Favorable results also have been reported in cases of otitis externa, furunculosis and wart scratches.

The species of animal itself does not matter. Dogs, horses, cattle and cats all are receptive in a like manner to Perlacar therapy.

The duration of treatment in cases of non-parasitic dermatosis is not over 20 days. In cases of parasitic origin, an average of 4 to 5 weeks is required.

Numerous cases of parasitic and non-parasitic dermatosis have proven curable through Perlacar treatments although previously they had been treated in vain for a long period.

Unfavorable reactions in the patient have not been noted in any of the cases. Anaphylatic reactions have not appeared.

Concurrent inner organic diseases (nephritis) interfere with the results of Perlacar treatment.

The Perlacar therapy is clean and left entirely to the veterinarians. It permits a considerably more favorable prognosis.

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[11]Foerster T. R. Jg. 37 Nr. 17.
[12]Rieck B. T. W. Jg. 46 Nr. 51.
[13]Scholz, Dissertation from the Med. University Clinic, Muenchen, Vorstand: Prof. Dr. Noerr.
[14]Mayer, Dissertation from the Medical University's Animal Clinic at Leipzig, Director: Obermedizinalrat Prof. Dr. Schmidt.
[15]Baustaedt D. T. W. Jg. 38 Nr. 48.
[16]Bartling M. T. W. Jg. 82 1931 S. 35.
[17]Poentsch T. R. 37. Jg. s. 534-535.
[18]Scherf T. R. 28 Jg. Nr. 1.

BREED MARES

The decline in the number of horses, which started in 1918, and in the number of mules, which started in 1925, continues at such rates as will eventually result in a great shortage of work stock. Already prices for desirable types and weights of animals reflect this growing shortage and the man who breeds his mare in 1933, although he will have to wait 3 years before he can market his crop, will certainly profit. We do not believe that the use of tractors and trucks for farm work has reached its peak, but horses and mules are never going to be out of a job on the American farm and certainly a colt can show a big profit on the present low-priced feed. —Ralph W. Paulton in *Breeder's Gazette.*

The Horse Situation

By RALPH W. BALKAM, Mattawan, New Jersey.

I HAVE been a quiet observer of agricultural conditions in the country at large since June, 1898, when I graduated from Veterinary School. Although the first ten years of my practice were largely spent in treating race horses, runners, trotters, and Polo horses, I was always interested in farmers, their operations on farms, etc. I spent three years among the horse raising farmers of North Dakota and when wheat was bringing $1 a bushel at the local elevator, and oats 50c, times were prosperous all over the country.

Contrast those prices with what such crops are worth today—with wheat at 30c, oats at from 7c to 13c, and ask what's the trouble.

To my mind, and I expressed it while still in North Dakota, when a farmer throws away a market which is bringing him constantly from $400 to $6,000 per annum in horse sales alone he is throwing out his most reliable crop. Instead of listening to high pressure salesmen with fine looking tractors to sell, had he continued with his horse breeding operations, wheat would still be worth a good price, and so would oats and barley, and he would still have a good price for all the horses he could spare. Not that I would encourage him to go into it wholesale, but to raise a good gelding of 1500 lbs. which easily finds a ready sale all over the country, especially in eastern markets.

What is it, that in spite of all statements that he would soon be viewed as a relic of a bygone past, has held up in price constantly for the last twenty-five years? The *horse*—and he is worth as much today as ever and mares are considerably higher, as they are useful for breeding, and I predict that in a couple of years, good sound young 1500-lb. mares will bring unprecedentedly high prices.

We are now feeling the scarcity of horses of all kinds, and the old ones are dying faster than young ones can be found to take their places.

The large harness manufacturers of the country are reporting a larger business in repair parts than for ten years past, and implement manufacturers, too, are noticing an advance in horsedrawn equipment.

However, these big tractor companies have unwittingly and unintentionally shown us something pretty good as a money maker.

Here it is! As I was driving along the Lincoln Highway, in the mid-west just beside the road I saw a wonderful team working in the field. I got out of the car and walked over to the fence, and saw 16 fine drafters weighing around 1800 lbs.—16 of them hitched to a big tractor outfit—12 plows, disc harrows back of them, and smoothing harrow in the rear.

"Well, what do you think of this rig?" asked the farmer.

"Now," said I, "you've arrived. This is the most efficient, the most thorough arrangement, that I ever saw. You probably got that idea from Wayne Dinsmore, Secretary of the Horse Association of America."

"Yes, I did, and this 'tieing in and bucking back' arrangement prevents runaways, and makes the team easier to drive than any tractor. I only have to drive the leaders."

"Are there many of these hitches hereabouts?"

"Yes," he said, "quite a few, and all farmers like them and take to them like 'a duck to water'."

"Well," said I, "the Horse Association of America is the best association of good sports I ever knew and are doing more for the farmer, the public, and the veterinarian, than any association I know. They will pull the farmers out of the Slough of Despond quicker than any other agency, if the farmers will only believe what they tell them. They will bring back the pros-

perity the American farmers used to know, 'with wheat at $1 a bushel and other grains corresponding in price'."

This I believe thoroughly. I believe all veterinarians owe a debt of gratitude to this remarkably fine body of men, the Horse Association of America, whether they are engaged in practice with large animals or small.

I realize very well, that many veterinarians are depending on small aminal practice today—*they must*—and many of the younger men in practice don't know much about horse practice and care less. But the older men, especially in the central and middle West, should do all possible to speed the breeding of the *right* kind of horses, and all should be members of the Horse Association of America. The fee is nominal—anyone can afford it, and the information and letters the Horse Association send every month, you can not afford to miss.

You will perhaps think I am wrong, when I tell you there is a good market for horses in Boston, New York, Chicago, Minneapolis, and all over—big horses fifteen to eighteen hundred pounds, and also good saddle horses, hunters, etc. There is a fast growing demand for saddle horses. Many stables in the East, starting with three or four horses of inferior grade, rapidly increased until they have erected large brick stables for 75 horses or more.

The West is the logical place to raise these, and many eastern buyers would go west looking for horses this spring, but there are few desirable ones to be had. If there were more horses to be had, western oats would already be worth three times what they are today.

In the "New Era," already dawned, the horse, now guffawing at the general public, is ready to take his place again among people who can appreciate what he can do willingly, economically! Let's get behind the Horse Association to encourage the raising of a good type of real horses.

I have seen many of these Horse Pulling Contests sponsored by the Horse Association. They have grown year by year and the enthusiasm is about like what a first class horse race or rodeo will inspire, and there always follows a great search for good pulling horses, and price doesn't bother much.

The dynanometer has shown up the unrealized power that has always

existed in good horses, and has been of great advantage in increasing the respect of mankind, even real good horsemen, for real intelligence, combined with wonderful power.

Many people have said: "For big farm operations the big caterpillars are the thing." Are they? The biggest farm in the United States or Canada contains 87,000 acres of tillable land. They have a ten acre field filled up with all kinds of tractor junk—and 500 horses doing their work today; they haul their grain from 10 to 30 miles to market with horses (14 or 16 horses in pairs pulling three large tank wagons).

No, the good farm horse is gaining in popularity every day, just for what he can do.

MILK PRODUCTION RECORDS

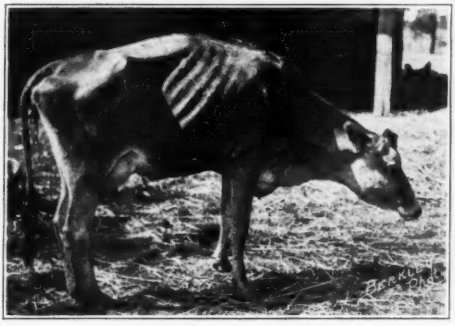
Breaking all United States records for continued high production by a dairy herd, John Coppini's herd of about 20 purebred Jersey cows at Ferndale, Calif., has yielded an average of 550 pounds butterfat, 9,139 pounds, or more than four and a half tons, milk per cow, per year, for four consecutive years of production testing. Coppini's cows were milked only twice daily during the four years and thirteen of the total number tested were in the herd every year.

No other herd of any dairy breed in the United States has ever made a four-year production record higher than 500 pounds of butterfat yearly and only one other Jersey herd in the United States has equaled or exceeded the Coppini herd's 1932 record of 576.18 pounds butterfat, 9,139 pounds milk even on three times a day milking or oftener. For the four years Coppini's Jerseys averaged consecutively, 567.80 pounds butterfat, 9,450 pounds milk; 530.28 pounds butterfat, 8,601 pounds milk; 527.86 pounds butterfat, 8,865 pounds milk and 576.18 pounds butterfat, 9,643 pounds milk per cow.

In comparison, cows of all breeds tested in 942 Dairy Herd Improvement Associations in the United States during the testing year of 1929-1930, averaged 302 pounds butterfat, 7,608 pounds milk per cow for a total of 315,359 records of one year tests. —*Breeder's Gazette.*

PALSY AFTER CALVING

This is my patent name for a common disease of cows with young calves that occurs in my practice more frequently than any other. It is distinctly a nervous disorder, characterized by the cow going through repeatedly unusual and crazy motions, holding the affected portions of her body in a rigid position. Excitability is present at times and at others presenting somewhat of a dummy like appearance.



"Palsy After Calving."

This disease is not often fatal, but is important from the standpoint of loss of condition, flesh and milk, the alarming symptoms presented at times and its frequent occurrence. I have never seen the disease referred to in veterinary literature, nor have I met many veterinarians that seemed to have had much experience with it, or attach much importance to it. In my practice, it is an important disease of cows.

I think the cause of the trouble is due to absorption of some toxin from the uterus. Possibly the uterus does not free itself of the lochia as it should and it produces a toxin and is absorbed. The natural flow from the vagina is scant or absent in most cases, hence my opinion that it is due to absorption from the uterus.

As a rule the afterbirth has passed normally and on examination no pus is found in the uterus. The disease is much more prevalent when atmospheric changes are most variable and in sultry weather and on changes in weather conditions.

The symptoms indicate at once that they are of a nervous type—a sort of bovine eclampsia. The cow may continually go through the motion of grazing on bare as well as grassy spots without the usual fixed purpose of getting grass. Or, she may persistently lick at her calf, the fence, side of her stall or any object with which she comes in contact. In other cases, she persists in moving around to one side and licking her shoulder. Others are stiff all over and carry their heads high and look wild and excited. They may walk as if blind. In others the back is highly arched, or it may be swayed or curved sideways. The animal may walk with stiffened legs as if hoppled. In some the flank and sides are drawn and ridged, the cow moving as if straightlaced. At times only one hindquarter of the body is affected. One hip may be carried higher than the other with the entire leg stiff. Again, both legs and the loin may be the location of the stiffness and the cow may walk as though she were trying to get her rear parts in front.

The eyes in occasional cases are puffed around the orbits, but generally the eye is prominent and glary. Sometimes the cow will bat her eyes and jerk her head at every motion one may make about her head as if she were being struck at. Frequently on account of her stiff neck and jerky head the cow can be drenched only with difficulty. Sometimes she will fall if the head is not raised with care.

While the disease is usually in a milder form, I have seen cases so severe that the cow would die in convulsions or become paralyzed.

Some cows are predisposed to the disease and are affected repeatedly at calving time.

Another important aspect of the disease is that the attacks of the disease are irregularly remittent. The cow may have an attack one day, lasting from a few hours to all the day and be apparently perfectly well the next morning only to have another attack in the afternoon. Or several days or a week may elapse before another attack. The cow may remain well after one of two attacks of the disease or they may recur irregularly for a week, month or longer. Some cases are never entirely well at any time until the disease has run its course and there is no regularity as to the course it may run.

The appetite is usually good or only slightly impaired in the beginning, but under the stress of repeated attacks of the disease or its continuation for any length of time, the digestion becomes impaired and the cow grows weaker, refuses to eat or just minces a little, loses flesh and condition and the milk flow decreases.

Treatment

Many cases recover spontaneously overnight, or in a few hours, and do not recur. Treatment in these cases is not important. It is the persistent cases that require attenion. Chloral hydrate is a specific. I have used it practically exclusively in the treatment for four years and it seldom fails to give beautiful results, seldom requiring more than three doses to effect a permanent cure. When it is given in these cases, the cow is immediately relaxed and is better in every way. You may taste the chloral in the milk or smell it. It seems possible that we get not only the sedative effect of the chloral relieving the symptoms and relaxing the animal but also specific action.

I usually supply the client with three ounces of chloral hydrate to be given in one-half to one ounce doses in a drench, three times a day until the cow is relieved and to repeat dosing as symptoms reappear. Irrigating the uterus with permanganate will also cure some cases. I have tried many other treatments and found them less satisfactory.

Tupelo, Miss. J. T. Alston.

FLAX STRAW POISONING IN THE HORSE

In the last two months, I have treated nine cases of forage poisoning in horses. The case of a gray mare nine years old, weight 1600 pounds and in fair condition is typical of all.

I was called to see this patient, and was told that she had been off feed for two days, restless and showing a peculiar gait. The owner said he had been feeding flax straw. His flax had been out in the shocks during the fall rains and threshed a few weeks later. Upon examining the flax straw, we found much growth of mold on the straw.

Due to the moldy flax straw that was being fed and symptoms of poisoning that the horse manifested, the cause of the ailment was decided to be the moldy flax straw.

Symptoms.—The conjunctivae showed patechiae; the temperature was 102 deg. F.; pulse slightly slower and weaker than normal; polyuria was marked; incoordination of body movements; staggering shambling gait, and weakness of hind quarters. The patient was constipated; peristalsis was weak, and there was slight bloating.

Treatment.—The flax straw was immediately removed from this and the rest of the horses. Aloin, three drams; sodium sulphate, one pound; creolin, two ounces and nux vomica, one-half ounce was given at once in two gallons of water by way of the stomach tube. One grain of arecoline was given in three divided doses at one-half hour intervals. One-half pound of sodium sulphate and four gallons of soapy water at body temperature was given as an enema. This was repeated twice in two hours. When the patient began to improve a light laxative diet was given.

Since more horses on the same farm usually come down later with the same disease, I always have the owner give one pound of linseed oil meal to each horse on the feed to help eliminate any poisonous material that may be in the gastro intestinal tract and forestall attacks in these horses.

Forage poisoning is a very common occurrence throughout this section of the county. Whenever the stomach tube can be used, one should use it. Linseed or mineral oil is very good to use in cases where the gastro-intestinal symptoms predominate. I have had very good results from the line of treatment used.

Comfrey, Minn. E. H. Enge.

DO YOU REMEMBER?

1. Question.—How does the convexity of the lens in felines differ from that of other animals?

Answer.—The convexity of the anterior face is greater than that of the posterior in the cat family, while the converse is true in the herbivora and others.

2. Q.—Are choleliths more common in the cow than in the horse?

A.—Yes; the horse, deer, elephant and some other animals have no gall bladder.

3. Q.—Give the scientific name of the third eyelid.

A.—Palpebra tertia or membrana nictitans.

4. Q.—What is the cause of "milk sickness" or "trembles"?

A.—The weed *Eupatorium urticaefolium,* or white snakeroot, also called rich weed; also *Aplopappus heterophyllus,* the rayless golden rod. The poisonous property in both these weeds, trematol, is eliminated in the milk, causing disease in persons and animals consuming it. Even butter and cheese may cause milk sickness.

5. Q.—In what manner are maggots used in surgery?

A.—Sterile maggots of the blow or blue bottle fly are placed in wounds containing necrotic tissue, particularly in osteomyelitis and probably other cases where necrotic tissue is involved. They devour the traumatized and necrotic tissue but do not harm healthy tissue.

Wesley O. Keefer,
Ramsay, Montana.

Atypical Cases of Milk Fever

By J. T. ALSTON, Tupelo, Mississippi

Post Parturient Milk Fever

IN the discussion of this trouble at this time, it is my purpose to call attention to some observations that I have made of the condition in my experience that are usually not referred to in discussing it.

Case No. 1.—I was called to see a fine Jersey cow, down in the back yard of a boarding house. Her calf was three and one-half months old and she was being pushed for every ounce of milk that could be obtained from her. She was found in an almost complete comatose condition, temperature five degrees below normal, peristalsis absent, but evidence of a severe diarrhea before she went down was revealed in the back yard where she was kept. The cow had the run of a fine pasture in the day time and was fed in addition cottonseed meal and the scraps and slop from the kitchen.

Diagnosis.—Milk fever.

Treatment.—Udder inflation.

The cow was up on her feet in three hours and made an uneventful recovery.

Case No. 2.—A cow belonging to me and being milked and fed by a hired man was found down in the pasture at night. Her calf was seven months old and she was giving a heavy flow of milk for a cow so long in lactation. She had refused her feed in the morning and given little milk, and diarrhea was noted. Her ration had consisted of cottonseed, cottonseed meal, velvet beans, and a mixed alfalfa hay, a one-sided protein ration calculated to stimulate milk flow and cause digestive disturbances.

Diagnosis.—Milk fever.

Treatment.—Udder inflation.

She made an uneventful recovery.

Case No. 3.—A very good Jersey cow was found down in the yard of a tenement house at night. Her calf was about a year old. A rather severe diarrhea has been present during the day. All symptoms of milk fever were presented. The cow had been on a ration of unmeasured quantities of cottonseed meal, a high protein content dairy ration and alfalfa hay, and had been milking almost like a fresh cow.

Diagnosis.—Milk fever.

Treatment.—Udder inflation.

Recovery uneventful.

I could relate a number of cases of post parturient paresis analogous to those cited, but in 25 years of experience I have never seen a case of it except in cows that were being overfed on a rich nitrogenous ration calculated to produce a heavy flow of milk, and every case has been proceeded by digestive disturbance with a sudden onset of diarrhea. The diarrhea present in these cases is significant to me, as it is likely that the digestive disturbance cuts off, as it were, the supply of calcium or whatever it is lacking in the blood that we think produces milk fever.

Ante Parturient Milk Fever

In my opinion milk fever may occur under conditions favorable for its development, at any period of lactation, but the one thing that it is absolutely dependent upon is lactation. I do not think a dry cow will have milk fever any more than will a steer or a bull will have it. It is an accepted practice that a cow is dried off at least a few weeks before calving. Yet, I see reported in journals cases of milk fever as occurring in cows that are heavy springers and cows that are to freshen in a few days. Cows do go down not uncommonly at this time with other troubles, sometimes resembling milk fever, but in my experience they never yield to udder inflation, except

in cases that would recover without any treatment whatsoever, but many of these will yield to intravenous injections of calcium chloride or calcium gluconate.

Case No. 1.—A good Jersey cow was found down in the car on arrival at destination, with a young calf at her side not yet dry. All the usual symptoms of milk fever were presented, but the calf had not sucked nor had the cow been milked. Upon my contention that a cow will not have milk fever in any instance except in a case where milk has been recently drawn or sucked from the udder, I refused to pump up the udder. Nothing was done in the way of treatment except to drag the cow from the car and make her comfortable. Upon my return to see her in two hours, she was up grazing. Udder inflation would have received the credit for curing this cow had it been resorted to.

Case No. 2.—A heavy springer cow was hauled in a truck. The following day she was down with all the apparent symptoms of milk fever. The owner, a cattle man, insisted on inflation, which was done and repeated the same day. There was no pronounced change up to the next day, when calcium gluconate was injected into the jugular vein. In seven hours the cow was up eating and recovered nicely.

I could relate a number of cases as proof of my contention that milk fever is a post-partum and not a pre-partum disease, and that udder inflation is not indicated in any instance in a cow not giving milk. However, milk fever does frequently occur in my practice in cases where the cow has been only partly milked by man or partly sucked out by a calf. Leaving part of the milk in the udder is not a sure preventive, yet I think it may often prevent the development of milk fever. A vigorous calf often sucks out sufficient milk over night to produce milk fever in its dam, and this happens where the milk is taken mostly from one side of the udder.

PULMONARY ACARIASIS IN A MONKEY

In March 1932, a dead monkey and specimen of fecal material was received for laboratory examination.

History: This was one of 35 monkeys that had been purchased recently and placed in a zoo. Several of the animals developed a profuse diarrhea and some coughing. Eleven had died. One of these was sent to another laboratory, and a diagnosis of tuberculosis, with dietary disturbance, was made.

Microscopic examination of the fecal material failed to show any evidence of intestinal parasitism or anything else diagnostic.

The dead monkey was examined carefully and autopsied. This animal was extremely lousy and emaciated. Nothing was noted on autopsy except in the lungs. Markedly congested areas were present in the lungs and many encapsulated nodules were observed ranging from 2 to 5 millimeters in diameter. When incised, these nodules were found to have a distinct capsule on the outside and a liquid or granular liquid material inside. Several slides were made, attempting to stain acid fast bacteria. All attempts failed to reveal any evidence of acid-fast tubercle bacilli. The contents of a nodule was placed on a slide and examined with the low-power microscope, with the hope that an idea might be gained as to the character of the material. A partially degenerated mite was found. Several other nodules were opened and each one contained dead mites. In the mean time living mites emerged from the small bronchi, and lung tissue, and could be seen to move slowly on the cut or torn surface of the lung. These were small yellowish white parasites about the size of an air-sac mite found in poultry. Several of these were examined and both nymph and adult stages were found, and both male and female mature mites were observed. The live mites seemed to inhabit the smaller bronchi and air spaces.

Specimens were forwarded to the Zoological Division of the Department of

Agriculture, Washington, D. C., for identification. The following quotation is from the reply by E. W. Price, Parasitologist in Charge, Miscellaneous Parasite Investigations:

"The mites from the lung of a monkey appear to be *Pneumonyssus foxi*, a species described by Weidman from monkeys in the Philadelphia Zoological Gardens. We have little information as to the pathogenicity of these parasites. Fox in his book "Diseases in Captive Wild Mammals and Birds" is inclined to believe that lung mites may cause acute pneumonia."

This case is presented with the idea that it may give the practitioners who are not versed in monkey practice, a lead as to what may be encountered and purchased along with the zoo animals.—

J. D. Ray,
Kansas City, Mo. Kinsley Laboratories.

MANGE TREATMENT FOR DOGS

My stud Beagle contracted demodectic mange at about 17 months of age. Anxious to cure him, I went to the books on diseases of dogs to get a treatment. The remedies were tried diligently without any marked improvement. Next other widely heralded remedies were tried still to no avail. Then the more scientific remedies were discarded for remedies advocated by dog men as a sure cure. Finally, my patience was worn out and I took the dog to my farm and left him there in care of a negro that said he could cure him.

About two months later I went to the farm and saw the dog. He was a most pitiful sight, emaciated, wrinkled skin, reeking with pus from ruptured pustules and sores. Little hair was on his body. I picked him up and brought him back to my place to put him out of his misery, but I was anxious to get a litter of pups from him, so I decided to try to patch him up once more if possible and try another remedy that had been suggested to me, which consisted of lard eight parts, sulphur one part and phenol added to make about 5% of the mass.

First the dog was washed in homemade lye soap and allowed to dry, when the mixture was thoroughly massaged into every part of his body. This was repeated in one week. Improvement was very marked. The hair began to grow out nicely; the dog was in good flesh and stayed in good condition with an occasional application of the ointment until summer; when he was neglected and showed some signs of the trouble coming back. Then seven or eight applications at weekly intervals were applied. The dog showed no more signs of mange for six months, when he developed rabies and was killed.

He had been vaccinated once yearly for three years. He literally tore up the rest of a pack of six, which had also been vaccinated six months previously. One of the six developed rabies to date and that has been 90 days ago.

I have since used the lard, sulphur and phenol on a number of cases of mange, both sarcoptic and demodectic. It is better than anything I have ever tried on common mange and the only remedy I have found that exerts any marked influence on red mange. It is my stock remedy for all forms of mange and I have found it useful in ottorhea in a few cases and about as good a thing as I have found for sore teats in cows.

I ascribe the curative effect of the ointment mostly to the phenol, which I think has probably the most penetrating power on the skin of any antiseptic. The sulphur in the ointment has a two-fold purpose. It is a parasiticide and it makes the ointment "grainy" so to speak, that aids in the massaging. Without it the ointment is too slick to rub well.

J. T. Alston,
Tupelo, Mississippi.

Bang's Disease and Undulant Fever

The Bang diseased cows have been credited for numerous cases of Undulant fever during the last few years. The possibility of transmission of the *B. alkaligines* in milk is conceded but the relatively high incident of Bang's disease in dairy cows and comparatively low morbidity of Undulant fever in raw milk drinkers tends to exonerate milk and the cow as sources of infection of this malady in the human. P. Morales-Otero of the school of tropical medicine, San Juan, Puerto Rico, reports in the *Journal of Infectious Diseases,* three interesting experiments designed to test the susceptibility of the human to *B. alkaligines.*

In one experiment a 42-year-old white man in good health and negative to the agglutination test for the *B. alkaligines* was inoculated through abraded skin on the arm and, at the same time, two guinea pigs were inoculated through abraded skin on the abdomen. The man remained well but did evidence an agglutination reaction—1:40 during the third and fourth week. The man was discharged from the hospital normal and healthy at the end of the sixth week. The two guinea pigs were destroyed six weeks after inoculation and showed typical lesions from which *B. alkaligines* were obtained.

In another experiment, a 27-year-old colored man gave a negative reaction to the agglutination test and apparently normal excepting for hook worm infestation, was inoculated on three alternate days by rubbing a loopful of *B. alkaligines* of bovine origin on normal skin and at the same time two guinea pigs were inoculated on normal skin. The man remained normal. The guinea pigs were destroyed six weeks after inoculation and both showed enlarged spleen and iliac glands but cultures of the spleen were negative.

In another experiment a four-year-old cow that had aborted in the seventh month of pregnancy and from which *B. alkaligines* were isolated from the vaginal discharges and milk was given to a family consisting of husband, wife, and 8-year-old daughter, with the provision that each of the members of the family would drink one quart of milk per day. The husband and wife were both infested with hookworms and the girl was infested with ascarids. All three of the family gave negative agglutination reactions. The man was apparently normal excepting parasitism, the woman and girl were apparently under-nourished but other than this and parasitism they were normal. The man consumed a quart of milk daily for six weeks from the infected cow and remained normal.

The woman was treated for parasitism in the beginning of the experiment and during the first week she had some digestive disturbance. The quantity of milk ingested daily was reduced and the indigestion disappeared and at the end of the six weeks she was in better physical condition than she was at the beginning of the experiment.

The girl's general condition improved during the six-weeks' experiment. All three remained negative to the agglutination test. During this experiment the cream from 15cc of milk from the infected cow was inoculated into two guinea pigs each week. Each pair of guinea pigs was killed six weeks after inoculation. The first five pair of guinea pigs showed characteristic lesions of Bang's disease, the last pair that is the pair that was inoculated six weeks after the experiment was begun, were apparently normal on autopsy. Thus, the cow apparently eliminated the *B. alkaligines* for five weeks. These three persons consumed a large quantity of infected milk and remained normal.

From these experiments it is evident that not all humans are susceptible to infection with the *B. alkaligines* when inoculated on to normal or abraded skin or when ingested in milk.—Abst. by J. D. Ray.

Dogs Do Best On a Meat Diet Exclusively

By E. L. QUITMAN, Chicago, Illinois

I NOTE with considerable interest an article "The Veterinarian and Commercial Dog Foods" in the March issue of VETERINARY MEDICINE. It is a subject worthy of much consideration. On page 117 of this article, the writer has done me the honor to quote my instructions to clients for feeding their dogs. He disagrees with these instructions or most of them in a very positive manner. His dogmatic statement as to errors in my instructions is rather surprising in view of the fact that only one month earlier, in an article "Oh Doctor, What Shall I Feed My Dog" in the February issue of VETERINARY MEDICINE he laments the fact that there has been no public support of scientific investigations of the nutritional requirements of the dog and that such investigations as have been made were incidental to a study of the nutritional requirements of man or have been made by commercial organizations and the results not published.

It would appear that if there were but little scientific information on the nutritional requirements of the dog available to the writer of these articles in February; that he must have learned a great deal in one month to be able to say with such assurance that statements based upon an observation of "more than 40 years " in veterinary practice are incorrect.

Let us examine these statements which it is alleged are errors, and contrast the basis for them with the lack of support for the statement that they are errors.

1. "All dogs are carnivorous animals." The writer of the criticism is referred to any standard work on zoology or advised to examine the dog's teeth. He is also informed that the implication he sees in the statement is actually not there. The statement is complete as it stands.

2. "Dogs do not digest starchy or vegetable foods." Here again my critic should be reminded that the statement does not say that dogs cannot digest starchy foods and he is reminded that the space available for these instructions was necessarily extremely limited. Obviously specific directions are called for and there is no room for explanations and qualifications. These are given, when necessary, verbally. In my "more than 40 years" practice, I have probably treated very nearly if not fully 50,000 different dogs. I estimate that at the very least 20 per cent of the dogs I have treated have been suffering from dietetic errors. Many hundreds of these cases have been the milder forms of dietetic deficiency due to feeding cereals, although the animals were, at the same time, receiving some meat, and regularly I have seen these ailments disappear, promptly and completely, upon correcting the diet according to the feeding instructions on my card. In hundreds of acute cases, I have washed out of the dog's stomach and intestines rice, barley, wheat, oatmeal and other cereals that had remained in the dog's digestive organs for periods varying from three to 17 days, and yet were washed out so unattacked by digestive fluids that the identity of the cereals could be recognized readily with the naked eye.

This seems to justify the statement that "dogs do not digest starchy or vegetable food." It is not a sudden inspiration of my own, but a statement of fact that has stood the test of "more than 40 years" in practice; and I think, considering the size of my practice and the character and standing of my clients, that I may say it has satisfied exacting requirements.

3. "They should be fed raw meats." My critic does not object to this state-

ment on the ground that it is incorrect, but merely that there is no experimental data to confirm it. That being the case, on second thought, he is probably willing to let it stand on the authority of "more than 40 years" in practice. In general (and that is the way it is made) the statement is sound, although much meat that is lightly cooked is quite as digestible by the dog as is raw meat. Some of it, as liver, is quite indigestable if thoroughly cooked. Any raw meat, I believe, is preferable to the same meat if overcooked, and that is the condition in which it is apt to be given to the dog.

4. "Preferably beef." The large majority of my clients feed at least some beef to their dogs. A radical change in diet as every practitioner knows, will often upset even a well dog. When he is ailing is no time to make such a change except to correct the things that are wrong. This is just one of those things that one learns from "more than 40 years," in fact from a very few years in practice. If a horse has been accustomed to eating timothy hay and he has suddenly changed to a diet of alfalfa, although the latter is far better for a horse than the former, still his digestion will be thrown out of order and for days he will be unfit to work from a change even to a better feed.

5. "Crickets and grasshoppers." I surmise that this is just a little pleasantry on the part of my critic and need not be discussed. However, for the information of my critic, I will say that I have many times had dogs brought to me that were acutely ill after having been taken to the country for a day or two, and I have washed out of them from a single handful to a double handful of grasshoppers and without other treatment, they immediately recovered. Country dogs, I know, eat occasional grasshoppers perhaps every day in season, but when a playful dog is taken from the city into the country for a week-end and proceeds to fill up on these or other insects, food to which he is wholly unaccustomed, he usually makes a call on some veterinarian the next day.

6. The matter of price. Good chuck meat can now be had at 10 to 12c a pound. If we take a 10c, one-pound can of commercial dog food that is 50% meat and 50% cereal, the meat in it(and I contend that is the part in it valuable to the dog) costs 20c a pound. It is more convenient in the can to be sure, but on the basis of price alone, the meat can be purchased from the butcher cheaper than it can in a can.

I do not want to be understood in any sense as decrying scientific research or belittling its value. It is highly desirable and I wish we had more of it dealing with the problems of the dog; but at the same time, I wish to point out emphatically that not all the research of value is conducted in the laboratory. Just as valuable discoveries can be made and are made at the bed side, in the barn, in the kennel and particularly in hospitals connected with private practice as are made in research laboratories. The veterinarian who conducts a successful practice in a highly competitive field over a period of years, is in a position to make statements concerning his findings in that field with all the assurance, and I believe with just a little bit more assurance, than the laboratory man whose observations are limited to a period of weeks.

A CASE OF SCHISTOCORMUS REFLEXUS

Subject: A young Jersey cow.

History: Apparently normal up to the time to calve.

Symptoms: Cow down, laboring, two front feet and one hind foot outside, turned in opposite directions.

Treatment: Two hours of strenuous work.

Necropsy: A calf with a perfectly formed head, neck and shoulders and the rest exactly inside out, even to the directions of the ribs and the hair on the skin.

East Liverpool, O. L. H. Hartman.

Reviews and Abstracts

By FRITZ VOLKMAR, Columbus, Ohio

Paratyphus in Rabbits[1]

The Paratyphus-Breslau infection in rabbits consists of a caseous or ulcerative typhlitis and metritis, accompanied by necrosis of the liver and tumefaction of the spleen. The germ possesses affinity for the gravid uterus and causes abortion and mummification of the fetus and finally sterility. The intestinal tract forms the portal of entry in natural infections. The Paratyphus-Breslau infection is a disease of the breeding rabbits; it should be differentiated diagnostically from Pseudotuberculosis, which it resembles very much.

Gland Transplantation in Rabbits

The hypophysis and epiphysis, taken from newborn rabbits and transplanted[2] to newborn animals promote a more intensive growth. When the thyroid gland was included in the transplantation, the growth proved to be still more intensive (300gm in four days). Best results are obtained when the hypophysis and epiphysis are transplanted into the spinal cavity or into the cranial cavity. Subcutaneous transplantation of the accessory glands is less successful than the intradermal transplantation. The intensive growth of rabbits upon which accessory glands had been transplanted is more permanent than of those upon which no transplantation was performed. For this reason, the difference in weight between inoculated and non-inoculated rabbits is less marked during the earlier months, than with increasing age. The animals upon which transplantation of accessory glands had been performed, need more concentrated food, indicating an increased metabolism of the organism. Acromegaly has not been observed in these very normal animals. Although all the purebred experimental rabbits of the laboratory were born during the autumn, and therefore had grown up under the most importune conditions, and though the parents of the rabbits were very inferior to prima full-blooded rabbits, yet these experimental rabbits surpass in weight the progeny of the selected breeding animals.

Neoplasm of the Rumen

In the region of the xiphoid cartilage, ventrally on the median line of the left sac of the rumen of a cow which was slaughtered, was found[3] a 10cm long, 4cm wide and 1cm thick fibrous extension which was formed without the involvment of the mucosa. It served as a suspensorium for an oval tumor, 26cm in length, 18.5cm wide and 20cm thick. Its weight was 11 pounds. The cut surface was slightly moist, smooth and showed minute striations of the parenchyma of the tumor; the tumor tissue was pale pink in color. The periphery of the tumor was formed by a capsule of grayish-white tissue. Scattered in the parenchyme of the tumor lumina of vessels of various size could be seen, most numerous toward the border of the tumor. Sections of the tumor were stained with hematoxylin-eosin. The capsule layer showed parallel arranged fibers containing pointed nuclei. The capsule was set off distinctly from the tissue of the true tumor. Trabeculae could not be observed. The tumor itself showed fibrous boundles with regularly arranged individual cells; the tumor tissue being relatively void of nuclei; those present stained very weakly. In the marginal zone were a number of small elongated cell nuclei, rounded on the ends. The

[1]Witte, I. 1932. Beitrag zur Infektion des Kaninchens mit den Bakterium enteritidis breslaviense. (Paratyphus-Breslau in rabbits). *Arch. Tierheilk.* 65(4):344-352.

[2]Dubowik, J. A. 1932. Versuch einer hormonalen Beschleunigung des Wachstums junger Tiere. (Experimental hormonic growth-acceleration in young animals.) *Endokrinologie* 11(1):15-22.

[3]Solomon, S. 1932. Leiomyom am Pansen einer Kuh. (Leiomyoma upon the rumen of a cow.) *Berl. Tierarztl. Wochenschr.* 48(46):741-742.

deeper one penetrated into the tumor tissue, the fewer nuclei were found.

Differentiation was obtained by the Van Gieson stain. The outer layer stained intensely red; the cells may therefore be considered as connective tissue cells. In the deeper layer of the capsule, yellow cells, representing smooth muscle fibers were seen. The tumor tissue proper stained yellow; with occasionally red cells and between them a few vessels. They formed a fibrillary interstitium.

Diagnosis: Leiomyoma.

Leiomyomas have not previously been reported from the forestomach of cattle. According to Joest they are considered rare tumors.

Lesions of Jaundice in Dogs

The incubation period of jaundice in dogs was found to be 7 to 31 days. The postmortem lesions were found to be as follows: More or less emaciation; the mucous membranes of the unpigmented skin were yellowish discolored to a considerable degree. Small amount of a serous exudate, yellowish in color, in the abdominal cavity; all the abdominal viscera had a yellow color. In the majority of cases considerable hemorrhage in the mucosa of the stomach, often covering the entire inner surface of the stomach, in other cases restricted to stripes localized in the apices of the mucous folds, could be observed. Similar hemorrhages were found in the intestine, especially in the duodenum. The liver was congested and friable; sometimes yellowish grey areas, the size of a pea, were present. In one case a hematoma, the size of a hazelnut, was found in the adrenal gland. At times the kidneys showed petechia. Almost invariably the bladder was contracted and contained small amounts of an intensely yellow, rarely bloody, urine. Hemorrhages in the bladder were present quite frequently. The spleen was almost always tumefied. In several cases, severel cc of a serous, bloody exudate was found in the pericardial sac. Subepi- and subendocardial hemorrhages were noted as of common occurrence. The lungs exhibited on the surface a marbled appearance and contained hemorrhages. Hemorrhages were also present in the thyroid gland, pancreas and in other organs.

[5]Aellig 1931. Icterus gravis beim Hunde. (Jaundice in dogs). *Zeitschr. f. Infektionskrankh. etc. der Haustiere* 39:169-210.

Lesions of Lead Poisoning in Cattle

Post mortem findings[4]: Extreme paleness of the gastro-intestinal tract; the peritoneum smooth, shiny and transparent; rumen and reticulum contained soft foodmasses; the omasum was filled with firm ingesta; the abomasum and the intestine had fluid and slimy contents. The mucosa of the stomach and intestine was partly inflamed, otherwise surprisingly pale. The liver was slightly swollen, shiny and reddish-brown in color. In each case the gallbladder was observed to be intensely filled. The spleen did not exhibit any lesions. The kidneys were smooth and shiny, grayish-brown to reddish-brown in color. The thoracic cavity and its viscera exhibited no lesions. The autopsy of the brain revealed severe injection of the blood vessels and a serous infiltration of the ventricles.

Pox in the Canary

The author[6] observed on the roof of the mouth of a canary bird two yellowish white areas of the size of a wheat kernel. Cutaneous inoculation of material from the lesions into two canaries resulted in swelling of the follicles. On histological section of the skin tissue of the inoculated animals, fowlpox bodies could be definitely demonstrated. The virus could be cultivated upon canaries. One animal which survived the infection was found to be immune to reinfection, two months later. It was observed that canary virus produced merely an unspecific vaccina-

[4]Haltenhoff, R. 1932. Saturnismus acutus bei Rindern und Kalbern. (Lead poisoning in cattle and calves). *Arch. Tierheilk.* 65(4):360-370.

[6]Eberbeck, E. and Kayser, W. 1932. Ueber das Vorkommen von Pockenerkrankungen bei Kanarienvogeln, Buchfinken und Sperlingen. (Occurrence of pox among canaries, chaffinches and sparrows). *Arch. Tierheilk.* 65(4):307-310.

tion reaction upon pigeons. Thus, the virus exhibited a behavior similar to the monopathogenic pigeonpox virus toward the chicken. However, upon experimental transmission to pigeons, no immunity resulted.

Nonspecific Serum Therapy in Anemia of Sheep

On the theory that by building up the power of resistance in weak and debilitated sheep, in which the anemia was not due to parasites, a cure could be effected, a French veterinarian found that by stimulation of the defense mechanism of the body with a single dose of 5cc of anti-anthrax serum given subcutaneously in the inner aspect of the thigh, a marked inprovement resulted even in the most hopeless sheep. The present author[7] had an opportunity to check the efficiency of the treatment in a flock of sheep with chronic anemic debility. Fifteen of these sheep, weighing from 48 to 79 pounds were inoculated, also one healthy one, weighing 92 pounds. The majority of the flock suffered an anaphylactic shock, lasting for seven days, after which recuperation and improvement took place steadily. The heaviest of these animals died unexpectedly on the 36th day after inoculation. The three (untreated) controls died on the 12th, 49th, and 54th day respectively from the beginning of the experiment.

Effects of Iodine in Fowls

The importance of iodine[8] for the animal metabolism has not been sufficiently elucidated. Man and animals have need for the intake of a certain amount of iodine. This amount differs individually and depends upon certain biological conditions: climate, soil, season. Certain organs (the thyroid gland) possess the faculty to store iodine. Poultry is but slightly susceptible to iodine intoxication. Iodism does not occur in fowl, even after prolonged doses of iodine preparations. The general welfare of these birds is not disturbed after giving iodine, except for the disturbance of the ovarian functions, especially at the beginning of the egg-laying period. When medium doses of iodine were given, the eggs became smaller and lighter. When large doses were given, interruption of the egg-laying period occurred. However, no permanent disability resulted. Soon after the iodine intake ceased, the normal function of the ovary set in again. When iodine is given, it soon appears in the eggs which phenomenon continues for some time after ceasing of the iodine-intake. These eggs are remarkable for their keeping qualities. The advantages of iodine feeding for the general health of poultry, mentioned in the literature, could not be affirmed in the experiments of the author. Whether smaller doses have such an effect, and the value of peroral doses, these problems will be the subject of further studies.

Animal Inoculation in Diagnosis of Undulant Fever

In all clinical cases in which there is presumptive evidence of undulant fever or in those in which undulant fever plays a role in differential diagnosis the use of guinea-pigs as a diagnostic aid should be encouraged. The animal experiment in its simplest form enables one (1) to make a rapid diagnosis within three to seven days after injection by serological means; (2) a diagnosis about five weeks after injection from the macroscopically visible lesions in the viscera, and (3) a diagnosis at the latest four weeks after injection by means of thermometry. The combination of these three methods which enable one to make an accurate diagnosis of Morbus Bang in a relatively short time, will put the bothersome complement fixation reaction and the time-consuming histological organ-examination into the discard.

[7]Bisset, N. 1931. A preliminary note on the treatment of chronic anemic debility in sheep by inoculation. *Welsh Jour. Agric.* 7:368-371.

[8]Schmidt, J. 1931. Die Verfutterung von Jod an Geflugel. (The feeding of Iodine to poultry.) *Deutsche Tierarztl. Wochenschr.* 39(49):754-755.

[9]Lotze, H. 1932. Die Bedeutung des Tierversuches als Diagnosticum fur die Bang Bazilleninfektion beim Menschen. (The animal experiment in the diagnosis of Morbus Bang in man.) *Virch. Arch.* 287(1):162-174.

Brucella Organisms in Fistula and Poll-Evil

Of 12 horses with fistula of the withers and poll-evil, 10 were found to be reactors to agglutination and complement fixation tests with *Brucella abortus* Bang antigen. The author[10] concludes from his investigations that fistulas of the withers do not arise from a trauma, but represent a symptom of an infectious disease—Brucellosis. *Brucella abortus* seems to have an affinity for the tissue of the withers and the poll. It may be assumed that these tissues have a special predisposition to disease. From a closed swelling of the withers which contained serous fluid but no pus, *Brucella abortus* was cultivated in pure culture.

Mycosis Fungoides in the Dog[11]

A six-year-old Airedale terrier was presented with the following history: Nodules were observed to form in the skin about six to seven weeks ago; three weeks ago they began to show erosion. Progressive emaciation and diarrhea set in.

Clinical examination revealed the following: On the lateral chest two tumors in the skin, movable with the skin; one of them 1.5cm in diameter, flat and sharply circumscribed, the surface moist and furrowed. The other tumor was 2cm in diameter, but less sharply circumscribed. The right prepectoral lymph glands were about the size of a hazelnut. Distinct dyspnea present, giving rise to the assumption of daughter-tumors in the lung. The clinical finding and the history pointed to the diagnosis "Mycosis fungoides." The dog was recommended to be destroyed.

Autopsy finding: In addition to the tumors in the skin, tumors in the lung, heart-muscle, and right kidney. Histologically, granulation tissue of varying structure was found.

Bacteriological finding: With the Gram-Weigert stain, morphologically identical schizomycetes were found in the necrotic centers of the lung-nodules and in one skin tumor.

Colon Bacilli Destroy Anthrax Organisms

The fact that an antagonistic action exists between colon bacteria and anthrax bacilli can not be doubted.[12] The action is so powerful that even anthrax bacilli, dried on threads, will be killed. The antagonistic principle exists only in the living colon bacteria. It has been proved experimentally that neither products of metabolism nor ferments are responsible for this action, because the action is not altered when the products of metabolism in the fluid live cultures of colon bacteria are being absorbed to render them harmless; furthermore, filtrates of colon bacteria are ineffective. This antagonistic action of colon bacteria against anthrax bacilli takes place in the living body also. Animals inoculated with a bouillon culture containing a mixture of colon and anthrax bacteria, remain healthy, although, giving identical dosages of injection, there is a variation in the behavior of different anthrax types. In the living body, too, the products of metabolism do not play a role. The fact that guinea pigs vaccinated with colon bacteria are not protected against a subsequent anthrax infection proves that living colon bacteria alone are effective. Finally, the feeding experiment resulted in the valuable observation that animals remained alive when, in addition to anthrax bacilli, they were freely fed colon bacteria, but they died as soon as the antagonistic flora was rendered ineffective by the additional feeding of other microorganisms (lactic acid streptococci). This observation may prove a lead toward the solution of the question of pathogenesis of intestinal anthrax.

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[10]Hieronymi, E. 1932. Die Brucella-Bang Infektion des Pferdes und ihre Beziehung zu chirurgischen Leiden in der Widerrist- und Genickgegend. (Relationship of Brucella abortus to fistula of the withers and poll-evil in the horse.) *Deutsche Tierarztl. Wochenschr.* 40(38): 593-595.

[11]Wirth, D. and Baumann, R. 1932. Ein weiterer Fall von Mycosis fungoides beim Hund mit Darstellung des vermutlichen Erregers. (Mycosis fungoides in the dog and description of the causative agent.) *Virch. Arch.* 286(3):651-655.

[12]Gundel, M. and Klieve, H. 1932. Experimentelle Untersuchungen uber das antagonistisch wirksame Prinzip der Coli- gegenuber Milzbrandbazillen. (Investigation into the antagonistic behavior of colon bacteria toward anthrax bacilli.) *Zentralbl. f. Bakter.* I. Orig. 124:519-528.

Twelfth International Veterinary Congress

By JOHN R. MOHLER, Washington, D. C.

The veterinary profession of this country was placed on trial in 1930 when its invitation was accepted by the International Veterinary Congress to meet in New York City, August 13 to 18, 1934. This will be the first time the United States has been accorded this honor. The veterinary profession of our country is held in high esteem by the members of the profession abroad and much is expected of us. The success of this international event will be measured largely by the degree of preparation which should become intensive at once, particularly with regard to providing the necessary funds to carry on the Congress in a manner befitting the veterinary profession of this country. It is important that our national organization, the four regional, 47 state and 100 local organizations contribute their part to the success of the undertaking by cooperating with the officials of the International Congress in every way possible. In order that you may have more definite information concerning this Congress, some of the most frequently asked questions will be answered as follows:

1. What is the International Veterinary Congress?

An association of veterinarians which includes in its membership the leading veterinarians of all countries.

2. What is the aim of the International Veterinary Congress?

The aim of the International Veterinary Congress is an interchange of information with reference to the latest knowledge and achievements in veterinary science. With this end in view, the most important scientific subjects relating to veterinary medicine and surgery are discussed by outstanding authorities of the countries represented at the Congress. Such meetings result in establishing contacts and friendships between the members of the profession in various parts of the world which are mutually helpful in the development of our profession.

3. How is the membership of the Congress divided?

The membership consists of (a) Honorary Members, (b) Ordinary Members, and (c) Extraordinary Members.

Honorary members are those on whom the Congress has conferred honorary membership in recognition of their scientific work or of their services to the profession and science.

Ordinary members are delegates of foreign governments, delegates of veterinary and other colleges, delegates of veterinary societies, delegates of agricultural corporations and delegates of authorities, state and municipal administration and veterinarians, other representatives of medical science or practice admitted by the Organization Committee.

Extraordinary members are veterinary students and other persons considered eligible by the National Committee.

4. How large a membership has the International Veterinary Congress?

The membership in 1930 consisted of approximately 1,500 ordinary members, and 59 extraordinary members. The number of honorary members is necessarily limited, but is not given. (According to the Proceedings of the 11th Congress.)

5. What are the dues and financial administration?

The revenues of the Congress consist of subscriptions from members and voluntary contributions from authorities, societies, and private persons, these funds to be collected in advance of the Congress.

In summing up, it may be stated that an International Congress bears the same relation to the A. V. M. A. as the latter does to a State Veterinary Association, or as the State Association bears to a county or municipal association. The general aims and ideals of all these organizations are the same, but the purpose and results become more comprehensive as the scope of the various activities is broadened. There is therefore nothing magical about such Congresses.

The first International Veterinary Congress was held at Hamburg, Germany, in 1863—called by Professor Gamgee, of Scotland, to discuss the geographical distribution of communicable diseases of animals and the means of controlling such diseases.

The second meeting of the Congress was held in Vienna, Austria, in 1865. The third meeting was held in Zurich, Switzerland, in 1867. There was a period of 16 years before the next meeting, the fourth, was held at Brussels, Belgium, in 1883. The fifth meeting was held at Paris, France, in 1889; the sixth at Bern, Switzerland, in 1895; the seventh at Baden-Baden, 1899; the eighth at Budapest in 1905; the ninth at the Hague in 1909; the tenth at London in 1914 (not completed because of the outbreak of the World War); and the eleventh in London, in 1930.

We all should be looking forward eagerly to meeting and honoring some of these men who have contributed so generously to the advancement of veterinary science. And it is our earnest desire that the 1934 convention be outstanding in extending the outposts of knowledge on all lines of veterinary science, especially in its application to the public welfare throughout the world.